The Journal of Documentary Reproduction

MARCH • 1941

Microphotography in 1940

Use of Flat Film for Microcopy

File Microcopy Program of The National Archives

Microphotography for Scholarly Purposes

Microfilm for India

Volume 4 • Number 1

A QUARTERLY REVIEW OF THE APPLICATION OF PHOTOGRAPHY AND ALLIED TECHNIQUES TO LIBRARY, MUSEUM AND ARCHIVAL SERVICE

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The Use of Flat Film for Microcopy

A COLLABORATION*

THE USE OF flat film for microcopy has been suggested by Professor R. D. Bennett and others, and some of its advantages pointed out. Since 1937, we have been using flat film for microcopy and have devised the necessary mechanical equipment for experimentation with it. Our efforts, however, have been primarily aimed at the problem of standardizing microcopy and extending its use to the field of publication as, for example, through direct publication from the typewritten page. The need for flat film was brought out early in this study when it became apparent that strip film did not permit proper sectionalization of printed matter. The purpose of this short paper is to describe briefly the technique we now use. A more detailed article is in preparation.

The technique of microcopy needs standardization, particularly in connection with the problem of filing and handling finished copies. In this respect the disadvantages of strip film are evident. Its basic fault is that it does not permit proper sectionalization of printed material and, for this reason, must be used somewhat like a scroll instead of a conventional book. Microcopy, while new in some respects, should not be made too nnfamiliar to the reader; as a matter of convenience it should follow standard printing techniques except on a reduced scale.

Several problems immediately present themselves. The most evident are concerned with the film upon which the copy is reproduced, the camera for making the copy, and the reader for reading it. Without going too much into detail, the following summary will suggest the major lines along which our work has progressed.

The Film: Standard 3¼ x 4¼ inch cut film is used because it approximates the size of 3 x 5 inch filing cards commonly used in card indexes. The images are placed across the film in rows (Fig. 1), but

*By James A. Reyniers, P. C. Trexler and R. F. Ervin.

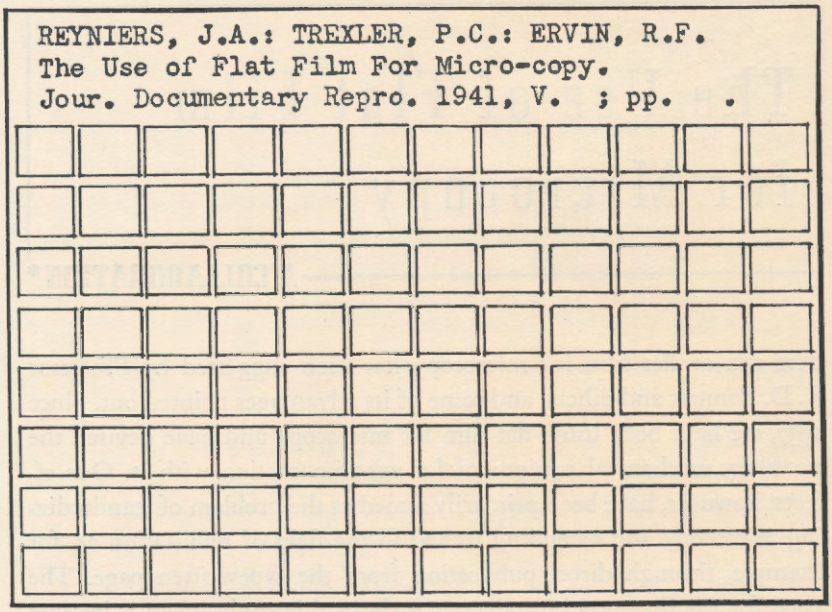

FIG. 1. Showing the Arrangement of Images (Size No. 2) in Rows Across the Film

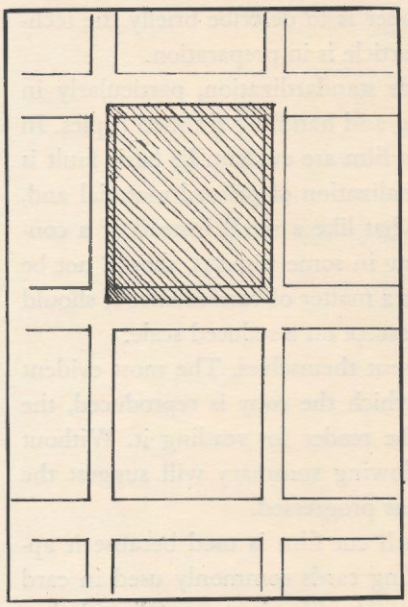

FIG. 2. Method of Splicing Kodachrome Transparencies into the Film Sheet

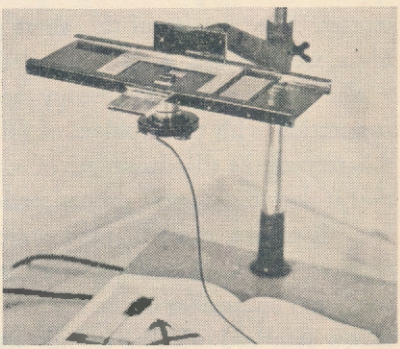

FIG. 3. Simplified Flat Film Camera

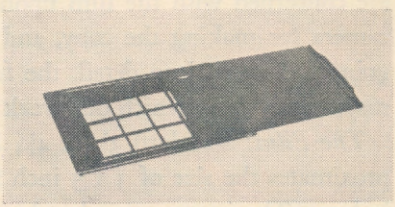

FIG. 4. A Mask Perforated with Proper Frame Size Placed over Film in Film Holder

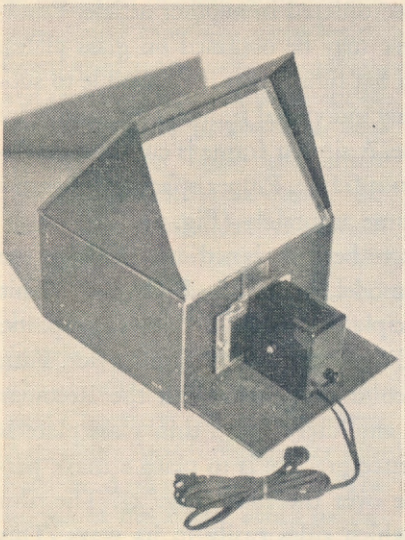

FIG. 5. The Projection Reader Opened Ready for Use

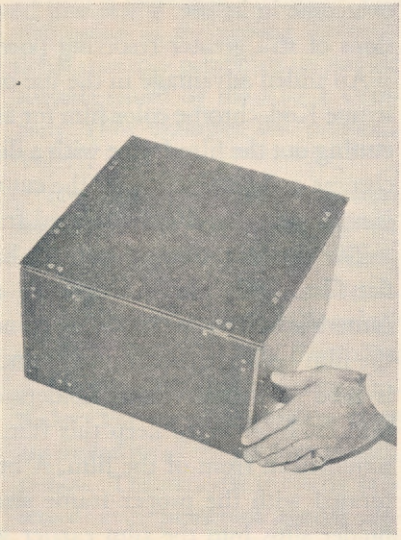

FIG. 6. The Projection Reader When Closed Is the Size of a Portable Typewriter

space is reserved at the top of the film for a typewritten title. The size of the film frame will vary with the film emulsion used, since the size of the image is limited by the resolving power of the emulsion. In practice, we place 42 and 96 frames on a sheet, depending upon the length of the article or other original. For our purposes these frame sizes are designated as No. 1 and No. 2, respectively. Two pages of printed matter are copied on each frame, thus 84 and 192 pages can be photographed on a single sheet of film. We have occasionally placed 12 and 204 frames on a sheet but most articles can be handled with No. 1 and No. 2 frame sizes. The number of words placed on a film depends entirely upon the resolution of the emulsion and the size of the print. Frame size No. 2 (96 frames) is adequate for the copying of most journal articles and the readers have been designed to handle this size.

In our experience with the frame sizes given above, only one standard film has been found capable of such resolution and that is the Microfile film supplied by the Eastman Kodak Company, which can be obtained on special order cut to the necessary size. This film is on a thin base stock, and there are certain technical difficulties which must be

overcome in its use. These will be considered in another article. Emulsions of still greater resolving power may be obtained on glass plates.

An added advantage in the use of flat film is that it is possible to substitute Kodachrome color film for any individual frame. This is done by cutting out the film frame with a die. A similar frame is cut from Kodachrome and cemented over the cut-out frame. Proper splicing apparatus is necessary to locate the colored frame accurately (Fig. 2).

The Camera: Several cameras have been designed and made to use flat film. Only one, a simplified model, is described (Fig. 3). This camera is built on a cross slide principle. It consists of three main parts: the film holder, the lens mount and the cross slide or film carrier. Film is held in the flat metal holders commonly used with the Recomar camera. In order to keep this film absolutely flat, a thin glass plate is mounted in front of the film. A better practice is to place a mask perforated with the proper frame size over the film (Fig. 4). The film holder slips into the film carrier which rides easily in its ways. This carrier is fitted with a ground glass at one end, and slides in an up-and-down direction on a cross slide which also bears the lens mount and focusing screws. Stops are placed along the slide to locate the frame on the film. These stops are so arranged that the ground glass may be brought quickly into position for viewing, after which the film may be returned to the proper position for making the exposure. The lens mount may be removed and the camera used on a microscope, or the camera can be mounted on a tripod and used in the field for general photography. Other designs have been made, but these for the most part are refinements of the model described, which is inexpensive to build, and if reproduced in quantity should be low in cost.

The Reader: The reading machine is of major importance in the use of microcopy. Since the reduced print must be enlarged to be read, it is evident that all methods for doing this may be resolved into those of projection or direct magnification. Projection involves relatively powerful light sources and a scanning screen, while direct magnification is limited to small areas of the film frame. Apart from these necessary limitations, the problem resolves itself into one of design which means convenience of use and low manufacturing cost. We have interpreted convenience of use to mean ease with which the film may be handled

and compactness of the instrument. It is quite obvious, however, that with compactness certain conveniences must be sacrificed.

We have designed a reader the size of a book, another the size of a portable typewriter case, and a more elaborate instrument with automatic locating stops, approximately the size of a typewriter and stand. These readers employ projection and direct magnification. In the present article a projection reader about the size of a portable typewriter is described (Figs. 5 and 6). It consists of a film carrier which is a duplicate of the camera but without stops, a light source and projection lens, a case into which the film carrier may be pushed, and the top carrying the reading screen which folds flat when not in use.

Film is slipped into the carrier and pushed into the proper position. Particular frames are easily and quickly selected. The reader will work with No. 1 and No. 2 frame sizes. The image is read on a daylight screen. The details of reading microfilm in terms of the proper screens, light intensities, etc., have been studied but cannot be considered at this time.

The lens is a considerable element of the cost in all readers. We have used a standard inexpensive lens. The construction cost for a reader of this type is relatively low and when manufactured in quantity should be somewhere around $30 retail.

Storing and Reproducing Microfilm: It is clear that prints of the original microcopy may be made by contact and with flat microfilm this process is both quick and inexpensive. We have experimented with methods of printing the title on the original film, but the simplest method consists of typing the title on adhesive backed paper and gluing the strip across the top of the microfilm. Besides furnishing an easily read title, the strip stiffens the film.

All film must be rendered scratch proof. We use the "Vaporate"[1] process, but other systems of toughening the emulsion, as, for example, coating the film with a lacquer-like substance, may be employed successfully. The simplest method, however, is to use a "Vaporator." The film is stored like file cards in a standard cabinet, and is so indexed. As it is handled by the titled paper edge, there is little damage to the

[1]A commercial process developed by the Vaporate Company, Inc., of New York, and marketed for certain purposes by the Fink-Roselieve Company.

film. The original negatives are filed in glassine envelopes, which give added protection. The main point is that flat film may be stored and handled in the customary manner as with filing cards, thus necessitating no great change in technique.

Summary: The use of the flat microfilm technique described above developed out of a study made by one of the authors (Reyniers) to standardize the technique of microcopy. Since it is essentially printing in miniature, microcopy should follow the standard method of sectionalizing material into pages which strip film does not permit. Through this approach it is possible to extend the usefulness of microcopy to regular fields of publication and to publish from the typewritten page rather than the page set up in type. The apparatus described was designed with a view to keeping costs low. The camera may be used in general scientific and nonscientific photography, or in the usual copying techniques. With it excellent photomicrographs in series may be made. The reader is portable and easily used.

The File Microcopy Program of The National Archives

PRESTON W. EDSALL

A PROGRAM for the reproduction of archival materials on microfilm, which has recently been initiated by The National Archives, possesses great potentialities for students of history and the social sciences. This program has developed naturally out of the experience of the establishment in furnishing copies of records in its custody. Under the National Archives Act as amended in 1936, the Archivist of the United States, subject to certain restrictions, is authorized to make or reproduce and furnish "copies of any of the documentary, photographic or other archives or records in his custody." This service may be rendered to agencies of the federal government without charge, but the law requires that a nongovernmental customer be charged a fee sufficient to cover "the cost or expenses" involved in copying records for him. Most of the orders received by The National Archives are for copies of one or a few papers and therefore are usually filled by supplying photostatic reproductions. Some of the orders, however, involve considerable quantities of records and necessitate the reproduction of hundreds or even thousands of pages. For such orders microcopying is the usual method of reproduction.

At first it was the practice of The National Archives to furnish an original negative microcopy of records to the person or institution that placed an order for microfilming. Experience has revealed that the reproduction of the same records is likely to be asked several times. Repeated filming not only means duplication of effort but also results in wear and tear on the records themselves. A procedure has therefore been established whereby special study may be given to considerable units or important bodies of archival materials involved in orders for microcopies. If this study reveals that the materials are of sufficient research value to make it probable that others than those placing the original

orders are likely to desire microcopies, The National Archives, if there are no countervailing obstacles, will make for retention in its files negative microcopies of the materials ordered. From these "file microcopies," positive prints will be made to fill the initial orders and any orders subsequently received.

File microcopy projects that result from orders from outside The National Archives are being supplemented by projects that result from recommendations arising within the establishment. Thus advantage is being taken of the steadily increasing familiarity of the professional staff with the vast historical treasure in its custody. Some projects will be directed at the special needs of The National Archives. There are, for instance, certain types of archival materials such as registers of correspondence and master indexes that are frequently wanted simultaneously in the division where the records to which they relate are kept and in the Division of Reference, where searchers ordinarily work when using records at The National Archives. Microcopies of such archival finding mediums will go far to meet this double need of The National Archives and should also prove useful to libraries and other interested research institutions.

Two problems that are arising in the initial stages of the file microcopy program deserve special attention. First, there is the question of selection of the projects themselves. Generally speaking the program does not at present envision the selection of individual documents for microfilming but rather the choice of entire series or complete portions of series as the smallest units. In choosing between projects of relatively equal promise insofar as usefulness to The National Archives or probable outside demand is concerned, numerous questions must be considered—the amount of work necessary to arrange the records for filming, special editorial problems involved, the quantity of the material, and the estimated cost of the project. All these matters are important, but from the standpoint of The National Archives arrangement is vital, for unfortunately many bodies of records have been found deficient in arrangement when transferred to its keeping. Obviously The National Archives would not be justified in making file microcopies of unarranged or poorly arranged records. Any records of which such copies are to be made must therefore be put into as nearly perfect arrangement

as possible, and, if this cannot be done within a reasonable time, the records are not ripe for reproduction as a whole.

The second problem is editorial. The preparation of every file microcopy requires some editorial work, and some projects require so much editorial attention that the end product is described as an "edited microcopy." The purpose of the editing is to make the file microcopy as intelligible and usable as possible. The editor must assume on approaching this task that the readers who will use the microcopy know nothing of the records copied and that they have never seen and may never see them in any other than the scroll-like form of the microcopy. He must therefore provide full information concerning the records and the plan according to which they have been copied on the film. This information can be supplied in the form of a general introduction to an entire project, introductions to individual series of records involved, and editorial notes inserted wherever necessary on the film as the records are microcopied. The integrity of each series of records microcopied must be respected in planning the arrangement of materials for microcopying, and each roll of the microcopy must be made into as nearly a complete a unit as possible. Such unity of the roll will make it easy for The National Archives to fill orders for prints of specified portions of a microcopy of a group of records.

The tasks of the editor of a microcopy of archival materials differ in various respects from those involved in the publication of the same materials in book form. He does not confront the innumerable problems that are unavoidably incident to the transcription of documents for the printer; instead, he delegates the reproduction of the text of each document to the unerring camera and transfers to users of the microcopy the responsibility of deciding what documents say.[1] He does not have to collate transcriptions against original documents, to mark copy for the printer, and to read proof after the printer has set type. Comparable to copy marking and the reading of proof are, however, the preparation of instructions for the photographer and the examination of the microcopy antecedent to the making of positive prints. Obviously these proc-

[1]Where a document will not photograph distinctly, the editor may sometimes desire to furnish a transcription in addition to the document itself.

esses are less time-consuming and laborious than those involved in conventional publication.

To plan and direct the development of the file microcopy program the Archivist of the United States has designated an advisory Committee on File Microcopies, and as a result of its recommendations three projects, each the outgrowth of a private order, are now under way. Of these the least extensive involves a two-volume series of Colorado Territorial Papers from the archives of the State Department, which long exercised supervision over territorial affairs. The papers cover the period from 1859 to 1874, and many of them are expected ultimately to appear in the *Territorial Papers of the United States* under the editorship of Dr. Clarence E. Carter. The volume on Colorado in that compilation will, of course, also contain documents selected from many other sources than the two volumes of papers here involved; hence, it and the microcopy project are wholly different in character. Editorial material for the microcopy will be restricted to title pages, a brief introductory statement concerning the records, and a list of the papers.

Somewhat more elaborate in plan is a project for reproducing a 31-volume series of letters received by the Michigan Superintendents of Indian Affairs from 1819 to 1835. The letters are addressed to Lewis Cass, George B. Porter, Stevens T. Mason, and John L. Horner by the Secretaries of War and the Treasury, by other officials of these departments, by officers of the Indian service within the Michigan Superintendency, and by many other persons. In addition to a more comprehensive introduction than is planned for the Colorado project, a calendar and an index arranged by the surnames of correspondents will be provided for this project. The file microcopy will consist of 32 rolls of film, the first of which will contain the introduction, the calendar, and the index.

The projects just described involve single series of documents bound or mounted in books. The arrangement of the materials was therefore fixed. The third project, however, provides a greater measure of freedom in planning the order of microcopying. It encompasses several series of the records accumulated by the Oregon Superintendency of Indian Affairs during its 25-year existence ending in 1873. The principal series included consist of letters received and of letter books, which contain

copies of outgoing letters and some incoming letters. Registers of letters sent and received were kept for these series as a whole, and there are also three separate registers of letters in single volumes of the letter books. In arranging these records for microcopying, an effort has been made to bring together materials that searchers would naturally wish to use simultaneously. The general registers relating to entire series have been placed directly ahead of the series themselves. Similarly each register relating to an individual letter book has been microfilmed on the roll of film that contains the microcopy of that particular letter book. In one instance where the register of letters sent was found to be incomplete, it was completed before it was microcopied, and, in another instance where no finding medium existed, one was prepared. A historical introduction to the entire edited microcopy and special introductions to each series of records as well as numerous editorial notes properly located throughout the film will enable searchers to use the microcopy with no more difficulty, and perhaps with less difficulty, than would be encountered in the use of the originals.

These file microcopies are being made on 35mm. film, and it is probable that this size will be used in most future projects. The standard spool, which carries 100 feet of film, is also in use. The number of feet of film to each spool or roll of a microcopy will not be uniform, however, because a unit of records such as a volume or series of papers will not be divided between spools unless more than 100 feet of film are required for its reproduction. At present, one volume of records to a roll is the rule. Where future projects necessitate it, frames will be numbered and a flash system will be used to aid the searcher in finding his place on the film; in the existing projects, however, the page, folio, or document numbers that appear on the records themselves have sufficed for this purpose.

When the existing projects have been completed The National Archives will give publicity to the existence of the file microcopies and to the manner by which positive prints can be secured. The program will remain for some time in an experimental stage, and the measure of interest shown by scholars, libraries, and research institutions generally will do much to mold its future. It is difficult, however, to see any reason for doubting that a program that makes possible the reproduction of

important archival materials that otherwise would probably never be available outside The National Archives can fail to be welcomed by scholars and by those interested primarily in developing new techniques for documentary reproduction.

Microfilm Record of a Louisiana Plantation Home*

WEEKS HALL

In the summer of 1940 there arose the problem of compiling a photographic and typewritten record of the property known as "The Shadows," built on the banks of the Bayou Teche in 1830, at New Iberia, Louisiana, and still intact. The book which was compiled is in the vaults of the National Bank of Commerce in New Orleans, while a microfilm record is deposited in the Department of Archives, Louisiana State University, with Dr. E. A. Davis, Archivist. This department also has several thousand original documents from the above-named property placed on deposit by the writer.

The record was compiled for the following reasons: (1) a photographic inventory is valuable; (2) in case of theft; (3) in case of fire; (4) in case of absence; (5) to show rooms as of a certain date compared with older descriptions; (6) on account of bequest; (7) to indicate architectural detail intact; (8) to serve as reference to architectural detail which has been changed; (9) to record the genealogical records of those directly connected with the house; (10) to give a history of the grounds and their design of gardens since the present descendant has developed them; (11) to record old photographs of the house by photographic copies. In other words, every detail bearing on the house and its occupants from 1830 to 1940 has been recorded in such a manner

*Editor's Note: As a photographic and microphotographic project to record the history and present appearance of a southern plantation home, the undertaking described in this article is virtually a pioneer venture. The broader aspects of the plan should be of great general interest and the details of execution should be of considerable assistance to the technician. Dr. Davis' brief description of the paper records now on deposit in the Louisiana Department of Archives admirably supplements Mr. Hall's article and provides at the same time the necessary background for an appreciation of the record. It is indeed significant that through the instrumentality of microphotography original paper records may be studied in conjunction with a manuscript book about their locale. Present and future students will bitterly regret that similar records were not prepared of other historic houses and landmarks in Europe which have now passed forever beyond the power of man to record or recall.

that it is in permanent form in the event that the structure itself were to be destroyed. The writer, the owner of the house and great-grandson of the builder, as the only person who has complete knowledge of the history and contents of the house and grounds, considers this information worthy of preservation.

In beginning the record the largest-size—three-hole, 8½ x 11 inches—loose-leaf stiff cover was obtained. This size was chosen because it could hold original letters of appraisal and material of like size. The paper chosen was the strongest bond with copper-bound ring-holes. Records copied by the Department of Archives were mounted on this paper. It served also as the stock on which were mounted, on both sides, the photographs of the house and grounds. Dry mounting tissue was used, and the resulting stiffness actually added rigidity and permanence to the pages. The architectural photographs were not ferrotyped, but were on glossy stock. Muslin reinforcement rings were added to all material which could not be typed on the copper-holed stock.

After completion, the book was microfilmed, using 35mm. Agfa Supreme film. A copying stand, Leica IIIb, Leitz "Fuldy" Focusing Copying Attachment, a Leitz Summar lens operating at f:12.5 were used. Fluorescent units supplied the illumination. Each of the loose-leaf pages of the book was photographed separately. Process film might have been used for the typewritten pages, but the results with the above film were found to be perfectly practical for all phases of the work. It might be noted that the Model II "Fuldy" copying attachment is much easier to use than the old Model I when a series of spools is to be successively exposed in copying.

The writer in this photographic project used several lenses with the Leica IIIb. Not having the 28mm. Hektor f:6.3, one was rented from a New York dealer for the two days necessary to complete the work in which this lens was indispensable. The use of this particular lens made it possible to photograph each room in this 15-room house from each corner, the resulting overlappings making clear, even to the layman, the identification of the objects in the room. This was most important and the foundation of the entire record. It was also used occasionally in "tight" spots, and out of doors to show location of trees and garden design. No other lens would have taken its place.

Other lenses used include: Elmar f:3.5, 35mm., Summar f:2, 50mm., Elmar f:4, 90mm., Hektor f:4.5, 135mm. The 35mm. lens was used occasionally, the 50mm. lens was used when the copying work was done, the 90mm. lens was used for avoiding distortion on moderately close architectural detail, and the 135mm. lens was used for inaccessible detail, such as cornices and dormers.

A yardstick was photographed in each picture. From the cellar to the garret and in the grounds, a slate containing the number of each photograph as well as the direction from which the view was made was included. In addition a plan of the house was placed in the book, and the numbers of the exposures together with a detailed description of the objects in the room and the original use of the room are described in the caption under each photograph. By referring either to the plan, or to the photograph, the locations can be identified at once. Comparison photographs of details copied from old photographs are set side by side with those showing them as they are now.

The Historic American Buildings Survey of the United States government has since measured even the smallest architectural detail for their records, and the writer hopes to have permission to photograph these records when they are completed. They will form an invaluable addition to the book.

An inventory of the plants in the gardens, with their botanical names and locations, was recorded. The marble statues, the boxwood hedges, and the walks—all were photographed. The formal garden was photographed with the wide-angle lens so that its entire design is obvious.

The writer is very much indebted to Mr. Errol Courrage, of New Iberia, whose work, consultation and advice in the matter of the photographic part of this record were very valuable. Leitz equipment was used throughout, and with very few exceptions the enlargements were made from full frames of the 1 x 1½ inch format.

All doors were photographed straight on, as were the windows. The original plaster cornices were photographed at an angle with the 135mm. lens to give them character. The lighting for the interior shots consisted of two photofloods in reflectors immediately behind the camera where possible. All shots were strictly exposed by use of the Weston Master Meter, in some instances with double and quadruple allowances.

The precise data was sent on to the Pavelle Laboratories in New York, with the exposed spools, and the enlargements were made by Mr. Courrage.

There is no other old house in Louisiana which has been so completely documented. It could have been done by no other camera as easily, and certainly not as quickly or cheaply. It is a record which, for all practical purposes, is absolutely adequate. The microfilming of the entire book provided a practical duplicate in negative form at slight cost. Altogether, it was a most interesting, and certainly, a well worthwhile undertaking in view of the future value of complete records.

The Weeks Hall Collection

Edwin A. Davis

The Weeks Hall Collection covers the period from 1782 to 1903 with the major part of the papers falling in four decades from 1830 to 1870, a period of unrivaled economic and political interest in the history of Louisiana. It contains 10,106 manuscript items and 12 volumes.

One of the most important features of the collection is that it represents material collected by one important Louisiana family and preserved intact for so many years in one location. It is in a remarkable state of preservation, clearly indicative of the initiative and foresight of the owners. It gives a clear picture of the lives of those who lived at "The Shadows," as well as others with whom they had business or personal relations.

The collection is valuable for a number of other reasons: It reveals Louisiana sugar plantation economy; there are letters and pamphlets on local, state and national politics; some material deals with railroad building; the vicissitudes of the War for Southern Independence and of the Reconstruction era are sharply brought out; and, finally, it gives an insight into the personal lives of the masters of "The Shadows."

The early papers are those of the Weeks and Conrad families which were joined by the marriage of Mary Clara Conrad and David Weeks. The plantation papers of William Weeks and his son David reveal the beginnings of the establishment of the Weeks estate, which eventually included at least three plantations. The Conrad family correspondence includes the early letters of Frederick D. Conrad, later the temporary

chairman of the Constitutional Convention of 1852 and for many years a prominent attorney of Baton Rouge. Many of his letters are written from "The Cottage," his plantation home south of Baton Rouge which is still standing. Another member of the Conrad family whose early correspondence begins in this period is Charles M. Conrad, later a member of the Louisiana Legislature, Representative, and United States Senator, Secretary of War, delegate to the Montgomery Convention, and Representative from Louisiana in the Confederate Congress. There is also a file of correspondence from 1823 to 1846 of Rachel (Weeks) O'Conner to David and Mary Weeks. Living on a plantation near St. Francisville, which David purchased upon the death of her husband, Hercules O'Conner, Rachel combines family and business affairs, and her commentaries upon local news, slave conditions, and troubles with overseers are interspersed with family happenings.

David Weeks died in 1834 and in 1841 Mary Weeks married John Moore of Franklin, a large planter and Whig politician. The political letters of John Moore occur in greatest quantity during the periods when he served in the House of Representatives, 1841-1843, 1851-1853, and during the War for Southern Independence when he was a member of the Louisiana Legislature and fled with the government to Mansfield and later to Shreveport. Moore's papers of an official nature while in Congress include estimates for railroads, prospectus of a proposed California railroad, project for the clearance of the Red River raft, appointments, pensions and levees. Correspondents of the period include A. B. Roman, Thomas Curry, W. B. and W. M. Prescott and John Ray—all important political figures.

The operation of the cotton and sugar plantations of the family constitutes a large source of correspondence including letters from various New Orleans and Mobile factors, among them Flower and Faulkner, John Linton, Lamheth and Thompson, John Hall, Adams and Mitchell, Hall and Rodd, Miles Adams and Co. and A. Miltenberger. Another phase of the commercial life of the period is reflected in the railroad papers of the New Orleans, Opelousas and Great Western Railroad, which include reports, letters, receipts and a rough draft of a contract with Cornelius Vanderbilt, 1856. There are two files of overseers' letters. The first is that of John Merriman of the Grad Cote Plantation and

covers the period 1839-1840; the second is that of William Lourd which begins in 1859 and continues until 1865.

The War for Southern Independence saw many new problems that the family had to overcome. Moore was absent a great part of the time on official business, the children were forced by the pressure of Union armies to move to Texas, but Mary Moore remained at the family home until her death in 1863. The destruction of the various homes and the difficulties of early adjustment and reconstruction are portrayed in the material of that period which includes labor contracts with freedmen, an effort to rehabilitate their lost estates. Upon the death of John Moore in 1866, W. F. Weeks became the head of the family and the greater part of the material is his. Also included are the papers of Randall Lee Gibson, General in the Confederate States Army and a Representative and Senator from Louisiana.

The collection, on the whole, is remarkably intact and in a fine state of preservation, because of the foresight and initiative of its owners. The subject matter is amazing in its versatility—the various elements constituting a complete record of the political, economic and social life of an aristocratic Southern plantation family.

Microfilm for India

HORACE I. POLEMAN

A MICROFILM service for cultural purposes was established last year in India at the Royal Asiatic Society of Bengal in Calcutta. It was designed, first, to cooperate with similar services in the United States for the benefit of American scholars desiring materials from India; second, to facilitate the organization of a bibliofilm service in India for the benefit of Indian cultural and educational institutions; and third, to encourage the use by Indians of microfilm copies of cultural materials from the United States. In this connection films received by India for educational and scholarly purposes will be free of customs duties and will encounter a bare minimum of censorship. This service was made possible by a grant from the American Council of Learned Societies for the purchase of a portable microfilm apparatus, the Graflex Photorecord and for a demonstration project on the occasion of the writer's recent trip to the Orient on official business for the Library of Congress.

India welcomed microfilm eagerly, as previously for the most part only vague reports about it had been heard. Functioning microfilm apparatus, however, already existed at the Bombay Government Secretariat, the Government Photo Registry Bureau at Poona, and at the Sri Venkateswara Oriental Institute, a cultural institution at Tirupati in southern India. The two government laboratories were operated solely for government service, but are now also available for cultural purposes. At the Bombay Secretariat filming is done with Leitz cameras and "homemade" stands. The government laboratory at Poona is completely equipped, although most of the apparatus is an amazing assemblage of instruments handmade from various manufactured parts and junk. The work accomplished, however, is professional and highly creditable; in fact, it could scarcely be improved upon. The organizer, Mr. Trivedi, is to be congratulated. He has been experimenting with

microfilm copying for the past 15 years, and for 10 years has been using microfilm. As a result of his endeavors the Bombay government is having all of its important old documents preserved on microfilm as well as many current legal transactions. The positive film copies only are used in connection with current government work. The Tirupati camera, a Graflex Photorecord, was installed by a group interested in preserving and distributing privately owned manuscripts through the medium of film, and the establishment thereby of a bibliofilm library for the use of scholars everywhere. Its accomplishments so far have been meager, but progress has been made and an agreement has been reached to cooperate with agencies in America. Lists of available films may be had from the Indic Studies section of the Library of Congress.

The American Council of Learned Societies machine has been deposited at the Royal Asiatic Society of Bengal in the care of a capable operator, and facilities for processing film are available. It was installed for the use of the society with the provision that microfilm copies of materials in its library or in other operating libraries of India be furnished American scholars upon order at cost. Inquiries should be addressed to the Director of Indic Studies, Library of Congress, Washington, D.C. Further, the machine is to be turned over to any American scholar, authorized by the American Council of Learned Societies, to use it anywhere in India for the duration of his stay.

The cooperating institutions in India are: the Central Library, Baroda; Bhandarkar Oriental Research Institute, Poona; the Bhārata Itihāsa Saṃshodaka Mandala, Poona; the Bombay Branch of the Royal Asiatic Society of Bengal; the Central Museum, Lahore; the Government of India; the University of Mysore, including the Government Oriental Library at Mysore; the Provincial Museum, Lucknow; St. Xavier's College, Bombay; the University of Bombay; the University of Calcutta; the University of Madras, including the Government Oriental Manuscripts Library; the Panjab University; the Oriental Manuscripts Library, Trivandrum, Travancore; Adyar Library, Madras; the Barton Library and Museum, Bhavnagar; the Benares Hindu University; the Educational and Cultural Departments of Hyderabad State; and the Imperial Library, Calcutta. Other institutions expected to cooperate are: Annamalai University, Chidambaram; State Library, Bha-

ratpur; Jain Siddhanta Bhavana, Arrah; Archaeological Department, Jodhpur; Oriental Manuscripts Library, Ujjain; Patna Museum; and the Tanjore Maharaja Serfoji's Sarasvatī Mahāl Library.

This exact list, however, does not mean that other institutions may not cooperate when the need arises, although there are, of course, a number whose narrow practices will prevent any cooperation. Only time and the changing customs of India will help this situation. However, it is now possible for Indic scholars and other interested individuals or institutions to secure from India microfilm copies of manuscripts or rare printed materials. The Royal Asiatic Society of Bengal in cooperation with the American Documentation Institute, the American Council of Learned Societies and the Library of Congress will act as the clearing house for such orders.

As a result of the demonstrations of the Photorecord camera the following institutions are installing microfilm apparatus: the University of the Panjab, the University of Madras, and the University of Mysore. Others are inquiring into the feasibility of the apparatus, and it is probable that additional cameras and readers will be purchased by the following: the University of Travancore, the Baroda State Library, and Hyderabad State Educational Department, the Archives Department of the Government of India and the Colombo Museum of Ceylon.

It was gratifying to encounter the enthusiastic reception of microfilm by Indians. The idea sold itself. Its advantages to Indian institutions are great, particularly in the preservation of original materials, which has always been a problem in India because of the severe climate and insect difficulties. Other methods of preservation have been too expensive for large scale use. While a number of such documents are beyond hope of preservation in any form, the majority by chance has just reached a stage where careful photography can preserve them in facsimile. With suitable technical guidance, which is not entirely lacking in India, the job of preservation can be done. For American scholars the fruits of this interest will be great. Many of the difficulties formerly encountered in the securing of copies or originals are eliminated. Furthermore, it is becoming increasingly difficult to buy or otherwise obtain original manuscripts themselves for transportation out of India, for the authorities are now extremely zealous in preventing materials from getting out

of the hands of Indian institutions. Barriers to traffic in film-copies are slight by comparison. The possibilities of building up film libraries of manuscripts in this country are in most cases limited only by the numbers of manuscripts themselves. Machines for copying are now geographically spread in India so that any part of the country can be tapped. For psychological reasons it is imperative that operations begin at once.

While in India the writer photographed 400 feet or almost 6,500 pages of manuscripts. These include the medieval field of Hindu ritual, Jain texts, unpublished handwritten catalogs of valuable manuscript collections, Buddhist texts, some of the old Kerala ritualistic texts of southern India; and always whenever any item of great rarity turned up, it was filmed regardless of its contents. The full list of the manuscripts photographed is on file at the Library of Congress and will be published. The films are the property of the Library. The originals may be used at the Library, or various types of copies may be ordered at cost.

Microphotography in 1940*

EUGENE ADHEMAR TILLEUX

In accordance with published announcements, the annual meeting of the American Documentation Institute convened at 10 A.M. on January 30, 1941, in the Assembly Room of the National Academy of Sciences at Washington. Twenty-three members attended in person, twenty-two others were represented by proxy, and sixty-three nonmembers were present by invitation. After an agenda, a list of proposed new members and an 11-page report by the president were distributed, Dr. Watson Davis, president of the organization, made the opening remarks and called the membership roll. A quorum being present, the sixteen persons nominated for membership were voted into the Institute. To this list a seventeenth name was added, namely, Dr. Herbert A. Kellar, representing the McCormick Historical Association of Chicago.

Dr. Davis appointed a nominating committee consisting of Dr. Solon J. Buck (The National Archives), Mr. H. K. Cummings (The National Bureau of Standards) and Dr. Mary A. Bennett (Columbia University) charged with the responsibility of recommending, to the afternoon meeting, a Board of Trustees for the coming year. Having referred us to the mimeographed report on the A.D.I., which he said would be discussed in full at the afternoon meeting, Dr. Davis then turned the meeting over to Dr. Vernon D. Tate (Chief, Division of Photographic Archives and Research, The National Archives) who was to conduct the Symposium on Microfilming for Scholarly and Scientific Purposes now under way at the separate member institutions. In taking leave of the rostrum, Dr. Davis reiterated the hope of the founders of the A.D.I. that "all the libraries of the nation and of the

*A Symposium at the Fifth Annual Meeting of the American Documentation Institute.

world may become one big library, each unit having its separate entities and responsibilities."

In assuming chairmanship of the meeting, Dr. Tate invited free, open discussion from the floor, limited to five minutes per speaker, and urged all persons participating in the Symposium to turn in complete written copies of their remarks for summarization in an article to be published in the JOURNAL OF DOCUMENTARY REPRODUCTION. "Microphotography is now big business," he added, "involving millions of exposures annually, and enjoying the recent blessing of the United States government. He then read a communication from Dr. H. Lodewyk Bendikson (Director of Department of Photographic Reproduction, Huntington Library, San Marino, California) posing the question of whether microfilming could prevent the menace of destruction. This paper [an expansion of the ideas expressed in Dr. Bendikson's memorandum on "The Need for Safety Measures," in the JOURNAL OF DOCUMENTARY REPRODUCTION for December 1939, p.307-08], cited the various uses of microfilm for preservation, consultation and condensation. Examples of each were: *preservation* of rare manuscripts and books such as the manuscript copy of Benjamin Franklin's autobiography or early editions of Chaucer's *Canterbury Tales;* the copying of material for purposes of *consultation,* such as the microfilming of bank checks, monthly statements of account, etc.; and finally the *condensation* of such data as meteorological information, statistical information, etc. In view of the bombing of European cities, Dr. Bendikson pointed out that none of our records are now safe unless kept underground, perhaps in concrete chambers. Although we appear to be returning to the days of Attila, when war meant the destruction of the records of civilization, Dr. Bendikson pointed out that we are now in a position to combat this destructive force through rapid reproduction by photographic and mechanical devices.

Following the reading of Dr. Bendikson's paper, Dr. Tate asked Dr. Henry Bartlett Van Hoesen (Librarian, Brown University) to describe microphotographic activities at Brown.

Dr. Van Hoesen stated that microphotography at Brown University was no longer the direct responsibility of the librarian. "Whereas in 1935 we had a wee bit of apparatus set up in a stock room," he said,

"the laboratory now has a staff of four or five persons who are directly responsible to the president of the university." Bookkeeping complications have come in the train of this expansion, however. "Before making a film," Dr. Van Hoesen stated, "we have to find a fund to charge it to, such as the Music Department, the McLellan Lincoln Collection or the Harriss Collection of American Poetry and Plays."

One recent activity of the Library was the microfilming of ten years of the *Providence Journal.* The librarian has recently been preparing bibliographies, and want lists of desiderata in special fields to be included in the microfilm program.

Grants of assistance to *Mathematical Reviews* have been received from the Carnegie and Rockefeller foundations. The filming of the complete text of articles abstracted in *Mathematical Reviews* is proceeding as requests are received, and in addition the Mathematics Library at Brown University has ordered film files of several publications, already amounting to over 200,000 exposures. The increasing availability of microfilm readers and, in particular, the prospect of the availability of the Student's Reader as a subscription premium, has resulted in a marked increase in the number of subscribers. For example, in the first year during which the Student's Reader was announced only 146 inquiries or reservations were received, whereas 106 have been received between December 1, 1940, and the end of January 1941.

The Latin-American film file at Brown University has already been described by Dr. James H. Case, Jr., in the September 1940 issue of the JOURNAL OF DOCUMENTARY REPRODUCTION. Three other projects still under way at Brown University include filming of a union catalog of works by or on Voltaire, the Brown collection of works on the history of science and the reproduction of the entire library card catalog for the use of the divisional libraries.

Dr. Tate then called upon Dr. Timothy F. Murphy (Chief Statistician in charge of Records, etc., Bureau of the Census) whom he described as a pioneer in microfilming in Washington and in government agencies.

Dr. Murphy explained that the Bureau of the Census was microfilming the original census schedules. He remarked that the condition

of the schedules for the period 1790 through 1830 was such as to discourage attempts at microfilming.[1] Schedules for the censuses of 1840 through 1880, however, are already recorded on film. The Bureau of the Census is now engaged in filming the 1910 population schedules, the originals of which appear in 4,000 volumes of approximately 800 pages each. Seventeen miles of 35mm. film have already been used on the 1910 census records, and approximately 35 states have been completed. The Soundex Index to the census records for 1900 has also been microfilmed. The 1920 Census has been Soundexed coded but not filmed. The magnitude of the task of eventually microfilming the 1930 census records is seen in the fact that they comprise 5,300 volumes or approximately 5,500,000 sheets of 14 x 18 inch paper, each sheet bearing the names of fifty persons. Dr. Murphy pointed out that the older census records are continually in use and that there is an increasing number of requests from patriotic societies, etc., for genealogical and other information contained therein.

In addition to microfilming the census records, Dr. Murphy's division also does much microfilming for other government agencies. For example, one table (compiled from information supplied by the American Medical Association) showing available hospitals, hospital beds, etc., was successfully filmed on 18 feet of microfilm, although the original was 256 feet long and accordion pleated.[2] The Burean of the Census has the only two rotary loose-leaf microfilming machines outside of Rochester, N.Y., in addition to the flat machines. "No matter how fast we work," said Dr. Murphy, "we always have most of our work still ahead of us."

Dr. Tate then mentioned the Medicofilm Service and allied developments, and asked Dr. Atherton Seidell to explain these services to the meeting.

After sketching how the need for a method or agency which would

[1]Some Census records for this period are incomplete; the schedules were printed on forms of different sizes depending upon the whim of the Marshals in charge of particular census areas; and many forms are on paper so thin that each side of the paper carries a mirror image of the writing on the other. Although microfilming of these records was deemed inadvisable, and as they would not long survive handling by the public, the complete file of schedules for the years 1810, 1820 and 1830 has been photostated for reference purposes.

[2]This table was printed on an electrical tabulating machine (IBM) on "super-fold" paper.

open the library facilities in Washington to scholars throughout the country had led to the organization of Bibliofilm Service "about six years ago"[3] Dr. Seidell stated that until this year Bibliofilm Service had done all the microfilming work of the Army Medical Library. A desire to provide that Library with its own microfilming service led Dr. Claudius Frank Mayer (Editor of the *Index Catalog*) and Colonel Harold W. Jones (Librarian) to cooperate with him in inaugurating the new Medicofilm Service.[4]

The essential differences between the Bibliofilm Service and the Medicofilm Service, as outlined by Dr. Seidell, are:

1. Medicofilm Service cannot depend upon generous foundation support but will have to operate on a pay-as-you-go basis.

2. The Bibliofilm Service has a monthly payroll which must be met whether or not orders are received, whereas the Medicofilm Service has a young man on the payroll whose remuneration is a percentage on all orders received.

3. Conditions at the Army Medical Library are unique in that this library possesses the world's largest collection of medical publications.[5] Because the books are not allowed to circulate, they are always available for microfilming. In addition the societies, physicians and scholars ordering microfilm on medical subjects are believed to be sufficiently reliable to warrant omission of a requirement for advance deposits.

4. Arguing that deposit accounts are too intricate and costly to keep track of, Medicofilm Service has adopted the practice of indicating the amount due on the order blank and returning it with the completed microfilm. This may be paid at the customer's convenience.

Dr. Tate then introduced Mr. George A. Schwegmann, Jr. (Director, Photoduplication Service, Library of Congress), who stated that he

[3]Bibliofilm Service antedates its present parent organization (ADI) by over two years, having been operated in the Agricultural Department Library since November, 1934. See the article by Dr. Watson Davis on p.64-66 of *Microphotography for Libraries: 1937* (Chicago: A.L.A., 1937).

[4]The organization of this service was announced in the *Journal of Documentary Reproduction*, III (September, 1940), 166-68.

[5]The nucleus of this collection was built up between 1865 (when the Surgeon General's Library numbered but 600 volumes) and 1873 (when it numbered over 50,000) by the indefatigable efforts of the eminent American physician, librarian and bibliographer, John Shaw Billings (1838-1913) for whom see *Dictionary of American Biography*, X, p.266-69, or the biographies by Garrison or Lydenberg. Dr. Billings also founded the *Index Catalog* and the *Index Medicus*.

could tell his story in seventeen words, namely: "The Library of Congress will reproduce any materials in its collections which are available for research use." This can be done, he explained, by photostating, microfilming, blueprinting, etc. Orders are received annually for approximately 100,000 photostats. The microfilming work done at the Library of Congress is largely the copying of books and periodicals, with the emphasis on periodicals. Because of the vast size of the library, with its acres of floor space and miles of shelving, the biggest problem is getting the books to the cameras.

The next speaker was Mr. Keyes D. Metcalf (Director of Libraries, Harvard University), who spoke of the microfilming at Harvard of 37 contemporary foreign newspapers.[6] Newspapers were received regularly for about a year following the inauguration of this service in July, 1938, but following the outbreak of the war there have been many gaps. However the University has in mind a long-range program and no concern is felt even where months pass without the arrival of certain files. To protect itself in this respect three copies of each issue were ordered. The first is mailed immediately to Harvard University. The second file is retained by the publisher to be forwarded to Harvard University when opportunity affords. The third file is turned over by the publishers to an agent of the University.

Dr. Tate next called upon Mr. Eugene B. Power (President, University Microfilms, Ann Arbor, Michigan). Mr. Power explained that since his was a private firm it must engage in self-supporting activities and the figures shown on its ledger, however small, must be black. It therefore publishes on microfilm only those materials actually in demand.[7] The various activities by which the firm is supported include the microfilming of American periodicals published prior to 1800,[8] and the microfilming of materials in European archives which relate to the history of America.[9] Mr. Power stated that the latter undertaking was

[6]Mr. Metcalf has already adequately described this work in the *Journal of Documentary Reproduction*, II (March, 1939), 41-43, and II (September, 1939), 180-83.

[7]An account, by its president, of the origin and activities of this firm, including the filming of the volumes listed in the *Short Title Catalogue*, is in the *Journal of Documentary Reproduction*, II (March, 1939), 21-28.

[8]This, the "American Periodical Series," and another fruit of the project—the "American Culture Series," are described in the *Journal of Documentary Reproduction*, III (September, 1940), 192-97.

[9]This work was undertaken for the American Council of Learned Societies.

still being prosecuted in Italy and England but that work elsewhere in Europe had been curtailed or stopped entirely. He added the interesting comment that his firm had recently duplicated, for American manufacturers, the set of bluepriuts from the Rolls Royce factory in England by making 15,000 projection prints from microfilm negatives.

Dr. Tate then introduced Miss Clara J. Kelly (Senior Reference Librarian, University of Washiugton Library, Seattle). Miss Kelly remarked that for several years her library had serviced a student body of 12,000 with "everything except movie film." About two years ago the Library began the collection of film files of early American periodicals and newspapers.[10] Ahout 2,000 lantern slides have been prepared for faculty use. The Carnegie Corporation has recently made a grant to the University for preparing a union catalog of library holdings in the states of Washington, Oregon, Idaho and Montana and in British Columbia. Work within the United States is proceeding with W.P.A. assistance, and in accordance with the working procedures developed by that agency the card catalogs of the libraries studied are reproduced on film.[11]

Dr. Tate then asked Dr. M. Llewellyn Raney (Director of Libraries, University of Chicago) to explain the various projects under way at that institution. Dr. Raney briefly reviewed the University's participation in the A.L.A. microphotography demonstration project at the Paris exposition of 1937.[12] The photographic laboratory expects to continue its annual business of $9,000 on orders received from practically every state and from several foreign countries. The newspaper *Le Temps* has already been filmed for the period 1861–1901 and present plans are to continue this work through 1920. American newspapers filmed include the Gary, Indiana *Tribune,* 1907 through 1912, the Gary *Evening Post,* 1909 through 1940, and many years of the *Chicago Tribune.* In addition, in cooperation with the Louisville Free Public Library the University of Chicago has filmed the *Louisville Daily Focus.* Orders have recently been received for the complete files of the

[10]Reported in the *Journal of Documentary Reproduction,* III (September, 1940), 210-11.

[11]Washington State W.P.A. Project No. 50050 (O.P. 165-1-93-62).

[12]One of many accounts of the equipment demonstrated at the *Trocadéro* is on p.39-44 of *Microphotography for Libraries: 1937* (Chicago; A.L.A. 1937). See also the references on p.vi-viii, and 2-3.

Farmers' Union Herald and the *Farm Market Guide,* to be filmed from bound office files (supposedly the only complete files in existence), and for certain years of the *National Union Farmer.* Briefs and cases of the United States Supreme Court for the period subsequent to 1938 have also been filmed.

Dr. Raney regards the microfilm laboratory at the University of Chicago as an experimental center and cited the Depue Printer[13] recently developed for the library, and now used at the Library of Congress and at The National Archives, and the processing machine built for the library, exhibited at Paris, and now being revived. Dr. Raney added that a volume on *The Scientific Basis for the Microprint Process* will shortly be published by the University of Chicago Press.

Because Mr. Herman H. Fussler, head of the University's Department of Photographic Reproduction, is the son of a professor of physics at the University of North Carolina, Dr. Raney described him as "practically born and reared in a physics laboratory." He came to the university of Chicago to pursue work toward an advanced degree before proceeding to Harvard. The Board of Trustees at Chicago, however, recently gave encouraging recognition to the laboratory's contribution to the life of the University by giving Mr. Fussler academic status as "Instructor in the Library."[14]

Dr. Tate then asked Dr. Irvin Stewart (Director, Committee on Scientific Aids to Learning of the National Research Council) to describe the recent activities of the Committee. Dr. Stewart replied that the Committee's interest in a microfilm reader was generally known to readers of *Mathematical Reviews,* that its interest in the various uses of microfilm will shortly be described in a report of the Committee, and that because its studies of flat surface microfilming are just getting nnder way at the Massachusetts Institute of Technology it is too early to make a report.

[13]Depicted and described in *Journal of Documentary Reproduction,* III (June, 1940), 93-95.

[14]The appointment to faculty status of University laboratory technicians as a means of promoting student familiarity with microphotography was one matter recommended for consideration by speakers at the Conference on Microcopying Research Materials, called by the American Council of Learned Societies and the Library of Congress, at Washington, D.C., June 5-6, 1940. The course taught by Fussler at Chicago is described in the *Journal of Documentary Reproduction,* II (March, 1939), 45-46, and III (March, 1940), 57-58.

Dr. Tate then introduced Mrs. Roberta C. Watrous (Bibliographical Assistant, Readers' Division, U.S. Department of Agriculture Library) who read a paper she had prepared at the request of Ralph R. Shaw, Department Librarian. According to Mrs. Watrous 686 orders per month were received during the last six months of 1940, or an increase of 60 orders per month over those received during the preceding year. These orders are filled by Bibliofilm Service. Plans are being developed for placing reading machines in the regional field offices of the several bureaus and services of the Department of Agriculture.

Mrs. Watrous reported that bookkeeping was one of the greatest expenses connected with microfilming.[15] She added that she had thought of exchanging microfilm on a footage basis as a substitute for interlibrary loans, thus doing away with keeping records. Mrs. Watrous argued that since libraries do not charge for supplying books to readers in the library, no charge should be imposed for bringing books to the microfilm camera although the actual cost of this service has been estimated at about 25 cents per item. She suggested photographing requested books in the library stacks as one step toward the abolition of the minimum or service charge. This would also do away entirely with the necessity for charging the books out at the circulation desk.

Dr. Tate then introduced Dr. Herbert A. Kellar (Director, McCormick Historical Association, Chicago), who had just been elected a member of the Institute. Dr. Kellar remarked that despite the rapid development of microfilming equipment and techniques an unfortunate lag existed between the availability of these improvements and their extensive use by the public. Microphotography's circle of acquaintances must therefore be widened materially. The art and techniques of historical restoration are more generally known because the public is daily brought into contact with such private projects as the restorations at Williamsburg, Virginia, and New Salem, Illinois, and such public restoration or measurement projects as those prosecuted by the National Park Service and W.P.A.'s Historic American Buildings

[15]Increasing volume of business is rendering former microfilm cost and bookkeeping concepts obsolete. See, for example, Dr. Seidell's remarks, *supra*, for one point of view. A brief but provocative discussion of some of the factors to be considered is Dr. Tate's "Cost Accounting in Microphotography" in the *Journal of Documentary Reproduction*, I (Summer, 1938), Pt. 2, 53.

Survey. Just as the latter agency's Survey of Federal Archives, Historical Records Survey, American Imprints Survey, Writers' Project, etc., are cooperating in locating, describing or inventorying manuscript or other historical records, so there is a need throughout the research world for coordinating all bibliographical activities and techniques. There is need for the increased coordination of the work of all learned societies and historical libraries and associations. Training in this philosophy should be included more and more in the courses of graduate study offered by American universities and colleges. Encouraging evidence in this connection includes the practical instruction in archival economy now offered at American University, Washington, D.C., under the direction of Dr. Solon J. Buck, and instruction in the uses of microphotography offered at Chicago and Colnmbia. Courses of this type should be included in the offerings of all our graduate schools. Until an adequate teaching staff can be developed in the universities, authorities in these fields should be invited to conduct "short term courses." These courses should include instruction in the actual operation and uses of cameras and equipment, similar to the training given at some institutions in the chemical preservation of squeezes of Greek inscriptions and cuneiform tablets,[16] the restoration of papyri, etc.

Dr. Tate then called upon Dr. Horace I. Poleman (Director, Project F: Development of Indic Studies, Library of Congress), who returned to Washington late in November, 1940, after 13 months spent in India. Dr. Poleman explained that the trip was undertaken for and supported by the Library of Congress, the American Council of Learned Societies and the American Documentation Institute, and that one objective had been to arouse interest in the formation of a service to scholarship comparable to the Bibliofilm Service in order tbat original Indian manuscripts could be made available on film to American scholars. He found microfilm services existing in Bombay (in the Government Secretariat, which uses a Leitz camera), in Poonah (where Mr. M. C. Trivedi, by operating a Government Photoregistry Office for twelve years with Leica and Leitz cameras, has made himself one of the

[16]The technique used at Princeton for preserving squeezes is reported in the *Journal of Documentary Reproduction,* III (September, 1940), 204-05. For the point of view expressed by Dr. Kellar, see also note 14.

pioneers in microphotography), and at Tirupati in southern India (where the service is operated by a private cultural society). The American Council of Learned Societies in supplying Dr. Poleman with a Graflex Photorecord camera had empowered him to leave it with some reputable agency in India, from which it could be borrowed by American scholars doing research work in that country.[17] The Royal Asiatic Society at Bengal was selected, and before Dr. Poleman left India arrangements were made for processing equipment and for supplies of fresh film. Dr. Poleman stated that the Indic Studies Section of the Library of Congress would gladly answer any inquiries regarding these services. While in India he distributed much literature regarding the American Documentation Institute, found great need for such a service, secured orders for six more Graflex Photorecord cameras and many orders for microfilm readers. He reported that Kodak Limited (of London), at the request of the Kodak agency at Bombay, had sent out two men to canvass the field and will keep the Library of Congress informed of any new installations made.[18] Similar plans were made for servicing the island of Ceylon, which Dr. Poleman visited briefly enroute to India, but the war prevented work in other areas. The immediate photographing of Indian manuscripts is particularly urgent because of their progressive destruction by insects and the climate of the country. Dr. Poleman believes that many items of great value cannot possibly be preserved for more than another five years except by photography.

Dr. Tate then called upon Mr. Sargent B. Child (Director, Historical Records Survey, Works Projects Administration), and asked that he describe microfilming work done by that agency. Mr. Child responded that the Historical Records Survey had done some work in a few states, but that most of the work (other than the copying of federal records) had been done by the Library Section. As examples of work done by W.P.A. he referred to newspaper microfilming at Chicago, Cleveland

[17]See American Council of Learned Societies, Bulletin No. 31, June, 1940, *Proceedings*, p.13.

[18]Dr. Poleman informed me on March 29 that recent advices from India indicate that a microfilm camera is now being used by the physics department of Presidency College, at Calcutta, in connection with statistical research work on jute, and that two other cameras have been purchased by the government for use in military censorship work.

and other cities.[19] He remarked that a report form recently sent out from the national office of W.P.A., and filled in by state officials, gave some indication of the extent of microfilming already completed.

At the suggestion of Dr. Watson Davis, Colonel Harold W. Jones (Librarian, Army Medical Library), supplemented Dr. Seidell's statement regarding the *origins* of Medicofilm Service by reporting that it charges a flat rate, and has very little overhead. Activities in which the Army Medical Library is now engaged, or has in contemplation, and which would he impossible without microfilming, include an index catalog of books issued subsequent to 1880. The Library's greatest problem is determining what it does *not* have. Colonel Jones reported Dr. Billings'[20] conclusion that the Army Medical Library has 80 percent of all medical literature cataloged, but added that this is true only for publications antedating 1900. As no complete catalog of recent publications exists, the entire catalog (20,000 cards) at the Library of the U.S. Public Health Service in Washington has already been filmed, and similar work is planned at the Pan American Health Bureau Library (Pan American Union, Washington, D.C.), the Department of Agriculture Library, and at other medical libraries. The Army Medical Library is also filming the indexes to medical portraits, after which the information will be copied on cards. Colonel Jones remarked that the New York Academy of Medicine index to 54,000 portraits has already been filmed, and that the list of portraits at John Crerar Library (Chicago, Ill.) has already been copied through the letter "D".[21] The complete index to medical portraits will probably total 150,000 items.

The eighteenth speaker was Dr. Watson Davis, President of the American Documentation Institute, who spoke of the excellent relationships which the A.D.I. enjoys with the U.S. Department of Agriculture, the U.S. Geological Survey and the National Bureau of Standards.

[19]For an account of a W.P.A. project of this type see "Microphotographing Bound Milwaukee Newspapers" by William H. Herrmann, in *Journal of Documentary Reproduction*, II (March, 1939), 11-20. W.P.A. conditions governing the disposition of microfilm newspaper files are given by R. C. B. [the late Robert C. Binkley] on p.46–47 of the same issue. See also *ibid.* p.48–49 for a contemporary summary of activities, by Dr. Luther H. Evans.

[20]See note 5.

[21]By April 1, 1941, the John Crerar list had been copied through the letter "L" to give a total of 1,600 portraits. It is estimated that this list will total 3,500.

Now that the Library of Congress, the Medicofilm Service and the A.D.I. are putting film into the hands of the people who want it, Dr. Davis stated that the original vision of the founders of the A.D.I. was approaching fulfilment. Financially, he said, the A.D.I. just about broke even in 1940. He defended the maintenance of deposit accounts and suggested that Institute members investigate the system and judge for themselves.

Dr. Davis thanked Mr. Ralph R. Shaw (Department Librarian), Mrs. Watrous, Miss Barnett and others for the fine assistance they are giving isolated scholars through the A.D.I. He added that he regarded the budding off of the Medicofilm Service from the A.D.I. as a normal evolution. "If I advised against the separation," he said, "it was because I felt that we could do the job more efficiently by working together." Now that two services have resulted, his one regret is that the fees charged are not identical, so that orders could be exchanged. He remarked that there was little uniformity of opinion concerning microfilm prices, and added, "Dr. Seidell thinks the A.D.I. prices are too high, whereas the Library of Congress thinks they are too low."

In conclusion Dr. Davis expressed appreciation for the great service which Dr. Seidell had rendered the A.D.I. during the past year, and added that many time and money saving forms and blanks now in use had been devised by him.

Dr. Tate then described cameras, readers, and other equipment developed or marketed within the year. New cameras include the Recordak Models C and D, the new portable, electrically operated Eastman Camera, and that developed by the Graphic Microfilm Service.

Dupont "microcopy" has entered the film field previously cornered by Agfa-Ansco and Eastman. The biggest gap is in processing equipment, where little or no advance has been made. Holbrook and Depue have developed new printers.[22] New reading devices include the Student's Reader,[23] developed by the Committee on Scientific Aids to Learning, which accepts strip film between glass flats, a similar reader, developed by Dr. Seidell which also uses strip film but lacks any hold-

[22]For the Depue Printer see the *Journal of Documentary Reproduction*, III (June, 1940), 93-95.

[23]See also the remarks by Dr. Van Hoesen, *supra*, and by Dr. Fry, *infra*.

ing mechanism, the Holbrook reader equipped with a roll film attachment, the reader developed for the Society for Visual Education which has a translucent screen and folds up like a portable typewriter,[24] and Recordak's new Model C.[25] The Argus, perhaps the best known of the earlier readers, has been discontinued by the manufacturers. The Readex Microprint Corporation (Boni process), has marketed a microprint reader.[26]

There have also been recent developments and improvements in filing and storage cabinets for microfilm.[27] Thus, microphotography has definitely advanced during 1940.

The meeting was then thrown open to general discussion, but at Mr. Schwegmann's suggestion Dr. Tate was recalled to describe recent developments at the Division of Photographic Archives and Research at The National Archives. He stated that about $116,000 was being spent for building alterations, laboratory equipment, for steel shelving for the storage of still photographic archives, and for bringing together the laboratory and the photographic files. Dr. Tate referred us to Public Bill No. 788 (the Elliott Bill),[28] legalizing the use of microfilm for public purposes, and permitting the destruction of original records provided they have been photographed under specified conditions. The microfilming of C.W.A., F.E.R.A. and W.P.A. records by the latter administration was referred to in this connection. It is still a bit early, according to Dr. Tate, to discuss publication by microfilm.

Dr. Thornton C. Fry (Bell Telephone Laboratories, New York City), was invited to supplement Dr. Van Hoesen's remarks by discussing, in greater particularity, the work of *Mathematical Reviews*.[29] Dr. Fry's remarks were a restatement of the facts set forth in the JOUR-

[24]Mentioned by Dr. Raney, *supra*, and described by him in the *Journal of Documentary Reproduction*, III (September, 1940), 198-99.

[25]The new Recordak cameras and projectors are described in the *Journal of Documentary Reproduction*, III (March, 1940), 50-55, and III (September, 1940), 153-68.

[26]Announced in the *Journal of Documentary Reproduction*, III (March, 1940), 66-70.

[27]See the *Journal of Documentary Reproduction*, III (June, 1940), 96-98, 116-117.

[28]H.R. 10026, 76th Congress, 3d Session; Introduced June 7, 1940; Approved September 24, 1940: "To provide for the disposition of certain photographed records of the United States Government, and for other purposes."

[29]This magazine is published monthly, contains 32 or 48 pages per issue, and is the first abstracting journal in the field of mathematics ever published in the United States. Volume I, No. 1 was issued in January, 1940.

NAL OF DOCUMENTARY REPRODUCTION for March, 1940, p.48-50, *q.v.* He added that the only other significant mathematical abstracting magazine is published in Germany, that it has not been regularly received since the outbreak of the war, and that this and other considerations had led American scholars to believe the time was ripe for the establishment of an American journal of this character. Hence *Mathematical Reviews* was set up within the last two years under the pressure of world events. The editorial office is at Brown University where one of the best mathematical libraries in the country is located.

Dr. Tate explained that delivery of the Student's Reader would not begin until about March 1, 1941.[30] Because a Student's Reader was offered, for a time, with each three years' subscription to *Mathematical Reviews,* under the terms of an enabling grant, the present demand for readers exceeds the supply.

Dr. Seidell rose to point out that each speaker put microfilm to a different use, and said this fact sufficiently indicated the impossibility of setting up uniform production routines. He remarked that the average cost of each request to a general microfilming agency (correspondence, clerical work, messenger service necessary to bring the book to the camera, etc.) was 50 cents, whereas usually only 25 cents was charged. By having specialized microfilming services operating at specialized libraries it would no longer be necessary for one agency, such as the Bibliofilm Service, to attempt the location and filming of all types of material.

Mr. James H. Case, Jr. (Assistant to the President, Brown University) praised recent developments in color film, and described efforts at Brown to duplicate color transparencies on microfilm. He also protested the slow delivery of microfilm cameras by manufacturers, and stated that Ludwig-Ott cameras developed at Yale University are being used by Brown University for microfilming archives in Latin America because no promise of delivery could be secured on the larger machines desired.[31]

[30]Actual delivery to purchasers in Washington, D.C., was made during the week of March 29. For a description of this instrument see the *Journal of Documentary Reproduction,* III (September, 1940), 214.

[31]The Ludwig-Ott camera is depicted and described on p.9-10 of the *Journal of Documentary Reproduction,* I (Summer, 1938), Pt. 2.

Mr. John K. Boeing (Sales Manager, Recordak Corporation, New York City), stated that prompt deliveries could be made of the new Eastman portable camera, and explained that past delays were due to the necessity for filling government contracts. He spoke highly of the experiments in color photography conducted by Mr. Eugene Power, and at Dr. Tate's request Mr. Power spoke briefly on this point. Dr. Tate then referred to Color Slides Cooperative at Princeton University.[32]

Asked to discuss facsimile processes, Dr. Tate briefly discussed the Balsley-Erpi process (which promises much for duplicating cards and which is at present held up in production) and the R.C.A. process.[33] The Multifax Duplicator developed by the Western Union Telegraph Company, and which gives results comparable to the halftone process, was also referred to.[34]

Dr. M. Llewellyn Raney of the University of Chicago then discussed, in considerable detail, the chemical aspects of the microprint process.

The remainder of the morning was devoted to a comparison and discussion of microfilming fees charged by the several agencies. Considerable variation was revealed. Perhaps the best single statement of explanation was that of Mr. George A. Schwegmann, Jr., of the Library of Congress. "There are many answers and many reasons," he said. He remarked that at first the Library had used a Stineman reel and one helper, whereas ten to twelve helpers and a supervisor are now employed. As organization became complex, prices naturally rose. Orders are constantly increasing, some of which must meet a delivery deadline, some of which involve as high as 50,000 exposures. In addition, the books pulled for filming have to be gathered from every section of the Library buildings. Requests are in many languages. Search for vaguely described items has necessarily been limited to one hour.

Of the 86 persons attending the symposium, eighty-two remained for luncheon in the library room, but only one third of this number (18 members and 10 observers) reconvened for the afternoon business meeting, which was largely given over to an annotated discussion by Dr. Davis of the president's 11-page report.

[32]For which see the *Journal of Documentary Reproduction*, III (March, 1940), 26-32.

[33]See also the brief reference to the Finch system in the *Journal of Documentary Reproduction*, III (June, 1940), 117.

[34]*Ibid.*, p.120.

Mr. H. K. Cummings then announced the recommendation of the nominating committee that the present Board of Trustees be unanimously re-elected. This was done.

A statement by Mr. H. L. Flemer (Technician in charge of Laboratory, Bibliofilm Service) of recent technical experiments conducted by him, and a reply by Dr. Tate and Mr. Keyes D. Metcalf to a question by Dr. John T. Vance (Law Librarian, Library of Congress) as to the progress made in microfilming manuscripts in European depositories, brought to a close the fifth annual meeting of the American Documentation Institute.

The London Times on Microfilm

CHARLES Z. CASE

By arrangement with the publishers, the entire back file of the *London Times* has been microfilmed on an Eastman Micro-File Recordak by Kodak, Ltd., Kingsway, London. The record commences in the year 1785 and probably constitutes the most detailed and authentic history of the past 155 years.

The Recordak Corporation is happy to be able to offer this film to the universities, libraries, historical societies and other interested parties of America on the following basis:

1. The complete file from 1785–1940 inclusive (approx. 85,000 ft.) for $6,750.

2. Blocks of years to total approx. 5,500 ft., each for $475. These blocks would be as follows:

A	1785–1812	F	1869–1876	L	1908–1913
B	1813–1837	G	1877–1883	M	1914–1920
C	1838–1850	H	1884–1891	N	1921–1926
D	1851–1859	I	1892–1899	O	1927–1931
E	1860–1868	K	1900–1907	P	1932–1936
				R	1937–1940

By this method institutions can obtain a complete file out of budget at any rate that their finances may permit, or acquire files for any periods of history in which they are particularly interested.

3. Any one complete year may be purchased also at the following rates:

Any year between 1785–1828 incl.	$ 30.
Any year between 1829–1844 incl.	50.
Any year between 1845–1907 incl.	75.
Any year between 1908–1940 incl.	100.

The above prices include the duty chargeable on entry into the United States, also transportation and insurance charges. Prices may be changed without notice.

4. The Recordak Corporation has no license to make prints, slides or other transparencies except with the express authorization of the *Times,* and no copies shall be sold except on terms prohibiting their use otherwise than for projection upon a self contained reading machine such as the Kodak Library Projector or other apparatus of a similar nature.

5. No copies shall be sold until one year after date of issue.

6. For the years 1906 onwards, reference should be made to the *Official Index to the Times* (subscription rate from the Times Publishing Company, Ltd., Printing House Square, London, E.C.4) which is an invaluable guide to the contents of the newspaper. By means of the index the date of any event, news item or leading article, in fact all editorial matter appearing in the columns of the *Times* may quickly be traced.

In the years 1785, 1786, 1787 and 1793 there are some missing issues, a list of which follows. Every effort will be made to locate these in order to complete the work.

1785	Jan. 1st & 21st—Missing
	Feb. 29th to Mar. 31st—Missing
	July 12th—Missing
	Aug. 1st to 22nd & 24th to 31st—Missing
	Oct. 1st—Missing
	Dec. 17th & 20th—Missing
1786	Jan. 5th & 27th—Missing
	Feb. 1st & 25th—Missing
	Mar. 6th (Pages 1 & 2 articles cut out)
	Mar. 15th (Pages 3 & 4 articles cut out)
	Mar. 9th, 11th & 16th—Missing
	Apr. 11th to 18th—Missing
	May 12th—Missing
	June 28th—Missing
	July 19th, 20th & 21st—Missing
	Aug. 23rd—Missing
	Sept. 11th, 23rd, 26th, 29th—Missing
	Oct. 16th—Missing
	Nov. 18th—Missing
1787	June 12th—Missing
1793	Feb. 11th—Missing
	June 5th—Missing
	Aug. 12th—Missing
	Oct. 18th—Missing

Microphotography for Scholarly Purposes

IRVIN STEWART

In December, 1939, Carnegie Corporation of New York requested the Committee on Scientific Aids to Learning to make an inquiry into microphotography for scholarly purposes in the United States. The report pursuant to that inquiry was made in July, 1940. The present summary of the report has been prepared at the request of the editor of the JOURNAL OF DOCUMENTARY REPRODUCTION. The summary consists of fifteen numbered statements, to some of which a brief discussion has been appended. Space does not permit the more complete discussion which accompanied the statements in the original report.

1. There should be an examination of the cost of and charges for microfilm copying.

Microfilm has been pushed as a low-cost copying medium. There can be little doubt that the claim is justified for long runs of material under the most favorable conditions. It is quite possible, however, that its economy has been overemphasized in the copying of very short runs of material though even here it is attractive for the scholar who uses his own camera and for the library seeking a substitute for an inter-library loan.

There are profound differences of opinion as to the elements which properly should be included in a charge for microfilm. At the present moment, it seems unlikely that there will be complete agreement as to the elements of that charge, but it should be helpful if the various copying services would clearly define the elements entering into their charges and would let their decisions on this point be known at least to each other.

Of course, costs and charges should not be confused. What is needed first is an understanding and, if possible, an agreement as to the costs of furnishing microfilm. Whether microfilm charges should be more

or less than the cost of rendering the service can be decided by each copying service. Much microfilm activity in the scholarly field has been made possible by subsidies either for equipment or for operating expenses. Before further competition on a price basis is subsidized, there should be more information as to the cost of the service.

The matter of charges is of great importance for the future growth of the use of microfilm. If the charges are relatively too high, the use of microfilm will be seriously retarded. If they are relatively too low, the service may grow at an unhealthy pace which can be maintained only by continuing subsidies over an indefinite period. If charges are significantly lower at one large copying center than at others, in the course of time that center may be expected to outstrip the others which in turn may not have sufficient volume of business to operate efficiently and economically.

2. A simple system of collecting charges for microfilm is needed.

The charge made for extract copying is frequently small. For some copying services it may be as low as twenty-one cents and for others as low as fifty cents. It is safe to assume that bundreds of orders bring in less than fifty cents and that thousands bring in less than one dollar.

Beyond the minimum, charges are based upon the number of pages copied or frames of film used. Where the charge per frame is employed, page size becomes a factor. The purchaser may not know the exact number of pages to be copied. Citations frequently list only the page at which a desired article begins; they may even indicate only a page number in the body of an article. The purchaser frequently must guess at what the charge will be for copying the material he desires. If the copying service extends credit, the bookkeeping and correspondence costs may exceed the receipts on small orders. If it requires payment in advance to simplify the keeping of its books, it must foresee cases in which the purchaser does not know what the charge will be when he places his order. If to obviate a large number of small payments it adopts the device of deposit accounts, it must choose between increased costs of accounting and complaints that the depositors receive statements only at infrequent intervals and then not in sufficient detail to permit a complete understanding of the transactions included in the account.

One method of eliminating uncertainty is to submit estimates before doing the copying. Where large orders are involved, advance estimates avoid misunderstandings. For small orders the need of handling each volume twice (once for estimates and once for photographing) becomes an important element in total cost. If the desired volume is located in some building other than that where the photographic organization is located, the dual handling is more complicated.

All in all, there is a very real need for a satisfactory method of handling the charges for large numbers of very small orders. This is common to most copying services.

3. There is need for a central listing of microfilm negatives which are available for consultation or from which positives can be obtained upon order.

Microfilm copies may he divided into two general categories; those which are intended for a single use and those which are to be filed for later use. These classes correspond generally to extract or short run copies and full volume or long run copies. As an illustration of the first group there may be mentioned microfilm copies of periodical articles, such as those furnished by Bibliofilm Service. They are intended for a single use. There is no point to listing them as, in the unlikely event of a later demand for a copy of the same material, it would be simple to make another photograph of the original.

For the more important microfilm copies, and especially those of which there are negatives from which positives can be obtained upon order, there should be a central listing corresponding to the Union Catalogue of the Library of Congress. This is advisable for at least two reasons: (1) in order that the same material should not be photographed a second time, and (2) in order that scholars may know where to go when they seek information about the availability of a photographic copy of particular documents.

The Library of Congress is the logical organization to maintain this central listing of microfilm intended to be permanently available. A procedure should be set up so that notice would automatically be given to the Library of Congress whenever such material is placed on film. Forms for reporting the existence of negatives and possibly pertinent details as to the procedure to be followed in obtaining positive copies

should be in the hands of those copying agencies by whom most of the copying of important materials will be done. The action of the Library of Congress in maintaining this central listing could be facilitated by the insistence of the principal purchasers of microfilm that listing information be furnished to the Library of Congress before they will purchase copies. A second step might be a requirement by the foundations in connection with any grant for microfilm or microphotographic equipment that the film covered by the grant or that exposed on the equipment be listed with the Library of Congress.

Whenever it is possible to do so, the central listing should be supplemented by publication of notifications of material newly made available in journals most frequently read by scholars interested in the subject matter of that material.

4. It is desirable to have master collections of negatives from which positive copies may be made. Foundations making grants for microfilm should, in appropriate cases, include provision for a master negative at a central depository.

5. There is need for a center of information on existing and proposed microphotographic projects to eliminate the danger of duplication. Existence of this center should be kept continuously before groups which might originate projects. Foundations should consult the center for possible duplications before making grants to assist in microfilming any material.

A large scale copying project requires a substantial amount of advance planning. It would be helpful to have a clearing house for information on projects under consideration so that every microfilm service investigating substantial microfilm copying projects might notify its intention and at the same time inquire whether any one else had undertaken or was considering a similar project.

6. A list of microfilm copying services with complete information as to their respective charges and practices should be published, kept current and widely circulated.

Publication in the JOURNAL OF DOCUMENTARY REPRODUCTION is not sufficient to insure the most wide spread dissemination of the information in the lists. The A. L. A. Committee on Photographic Reproduction of Library Materials might take the lead in seeing that current

lists of microfilm copying agencies with their respective charges and practices are published in those journals having widest circulation among librarians. It is even more important that the list be brought to the attention of scholars in various fields through publication in journals covering their specialties. In the absence of some better qualified organization, this task might be assumed by the A.L.A. Committee even though it is somewhat removed from the regular duties of that Committee. Undoubtedly, the wide spread publication of such a list in the periodicals of all disciplines should stimulate a wider interest in microphotography as such.

7. The operations of the American Documentation Institute should be studied with a view to defining more closely its service to scholars and its position with respect to other microfilm copying services.

8. While the Library of Congress should play a leading part in much microfilm activity, it should not have a commanding position in all respects.

The Library of Congress is adequately equipped to conduct a microfilming service in connection with its own holdings. In addition it should perform a valuable service as a center of information and in other respects, some of which are pointed out in other parts of the present report.

However, the Library of Congress should not be placed in a position of leadership in any aspect of microfilm activities which may involve conflict with commercial interests. The Library is dependent npon Congress for its support and in consequence is vulnerable to attack by members of Congress. It can not afford to become embroiled in any controversy, particularly where one of the participants might enlist the support of the Library Committee or of the Appropriations Committee. Commercial organizations with which the Library might come in conflict may be expected to capitalize on this weakness of the position of the Library of Congress.

The area which at the moment seems to be the most likely source of conflict between scholarly and commercial interests with respect to microfilm is that of copyright. There is always present also the possibility of differences of opinion as to the type of copying activities which it is proper for libraries to undertake and those which should be left

entirely for commercial copying services. The practice of the Library of Congress in these matters will be entitled to the respect which attaches to its prominence; but care should be taken to insure that any undue conservatism arising from its position as a governmental agency should not retard any desirable development of microfilm.

9. Cautious exploration of the copyright situation should be continued.

One of the major problems in connection with microfilm which seems to offer no ready solution is that of copyright. Attempts to modify the statutory provision governing copyright so as to afford a more reasonable application to microphotography for scholarly purposes should be continued. However, because of the conflict between the American Society of Composers, Authors and Publishers on the one hand and the broadcasting industry on the other, it is unlikely that any changes in the copyright act will be made in the immediate future.

Meantime, copying agencies generally are applying the rule of "fair use." The limits of fair use will be defined in practice. If copying agencies are too careless in their observance of copyright, they may cause a more severe limitation to be set than would otherwise be the case. On the other hand, if they are too cautious in their interpretation of copyright restrictions they may deprive scholars of ready access to properly copiable materials. For the immediate future, a continuance of the present policy of cautious exploration of the copyright situation should be continued.

10. An experimental project is suggested under which a small number of libraries with photographic equipment would cooperate in the microfilming of materials other than newspapers printed on disintegrating wood pulp paper.

11. The filming of newspapers should continue largely with funds furnished locally.

The microfilming of newspapers has been pushed further than any other branch of microphotography for scholarly purposes. Newspaper copying is ideal for microfilm. Because of the disintegration of the wood pulp on which newspapers are printed, they are logical candidates for preservation in film form. They offer continuous runs of practically identical material, and so fall into the class of materials for which

microfilm copying is most economical. The size of individual orders is such as to make them attractive to commercial copying services.

Many projects are under way in all parts of the country for filming files of newspapers. They capitalize upon the newspaper owner's desire to have film copies for his own use and upon the pride of the community or its library in arranging for the preservation of local history. These projects are far beyond the experimental stage. While they are valuable, they are projects for which local funds can most easily he obtained. Funds which the foundations wish to make available for microfilm can better be spent in other areas.

There is an exception in the case of "dead" newspapers—those which are no longer published. Such newspapers fall into the category of material on disintegrating paper for the copying of which local funds are not likely to be forthcoming. Each proposal concerning these newspapers should be considered on its own merits and in relation to other material which is being considered for copying. Another exception should be made for proposals which involve new methods of unusual types of cooperation, which if successful, might guide other copying projects.

12. Foundations should consider applications for grants for microphotographic equipment in the light of the desirable relationship between the services of the applicant and those of other existing and proposed services, as well as in accordance with some plan to insure coverage of all materials which should be photographed.

So far as the equipment is purchased with institutional funds, each institution must determine for itself the scope to be given its microfilm copying service. Where foundation fnnds are sought for the purchase of microphotographic equipment, some measure of responsibility rests upon the foundation for the determination of the microfilm policy to be followed.

It is snggested that every applicant for a grant for microphotographic equipment be required to state fnlly and specifically the materials which would he copied, the persons who would be aided by the establishment of the copying service, and the ways in which the requirements of those persons can not as satisfactorily be met by some of the existing copying services.

13. There is need for a low-priced reading machine to take part of the use of microfilm from the library to the scholar's office.

Since the above statement was made in the report presented to Carnegie Corporation, three such machines have been announced. The Spencer Lens Company, Buffalo, New York, has already distributed several hundred of the readers described on page 214 of the September, 1940, issue of the JOURNAL. Production of a reader by the Society for Visual Education, Chicago, Illinois (described in the same issue of the JOURNAL), has been somewhat delayed due to the requirements of the defense program, but the reader should appear in the fairly near future. Holbrook Microfilm, 33 West 60th Street, New York City, is the distributor of the last of the three readers mentioned.

14. More attention should be given to the quality of microfilm.

It is suggested that no microfilm copying service should send out film without inspecting it at least for the type of errors which can be detected without close examination.

15. For some time to come, there will probably be a place for many organizations interested in microfilm.

Microphotography for scholarly purposes is relatively new. It is a long way from realizing its full possibilities as a tool in the hands of scholars. The bibliofilm activities of the Department of Agriculture, later assumed by Science Service and still later by the American Documentation Institute, have kept the possibilities of microfilm persistently before scientists. The rotograph activities of the Modern Language Association have touched a few scholars in the languages. Microfilm reproduction of old English books has touched a very limited number of scholars in the humanities. The copying of old newspapers has brought microfilm to the attention of the scholars using particular issues of newspapers which have been microfilmed, while the microfilm reprint service operated at Brown University in connection with *Mathematical Reviews* can be expected to awaken the interest of mathematicians. By and large, however, it is quite probable that the great body of scholarship is hardly aware of the existence of microfilm—much less aware of its possibilities as a research tool.

In this situation, there is still a great deal more of guided promotional work to be done. Groups of specialists can be expected to carry the

burden for microfilm in their respective fields. As information and stimulation are received by regional and state library associations as a result of the activities of the committees of the American Library Association and related organizations, more library committees dealing with microphotography will probably be formed. As a great deal of promotional work still needs to be done before all scholars who should be aware of the possibilities of microfilm are acquainted with those possibilities, the setting np of committees by specialized groups and library associations is to be welcomed. To some extent they will get in each other's way, but so long as they rely upon their own funds and their own enthusiasm the net effect should be good.

In connection with groups operating on a national basis, somewhat more care must be exercised to avoid their working at cross purposes with each other. As those groups for the most part carry on their microfilm activities with funds made available by one or more foundations, control of the situation rests with the foundations.

NEWS and TECHNICAL NOTES

Agfa Films for Documentary Reproduction

Agfa Minipan, a panchromatic film of high resolving power especially intended for documentary reproduction, is now being supplied at a new lower price. The 100-foot darkroom and daylight loading spools now list for $5.25 each.

Agfa Minipositive, an entirely new film, is now available. In it balanced characteristics of fine-grain, high contrast and high resolving power have been incorporated for the preparation of positive transparencies from microfilm negatives. Standard 100-foot lengths perforated or unperforated on darkroom loading spools list at $3.75. For prices on other sizes and additional information, address Graphic Film Division, Agfa Ansco, Binghamton, N. Y.

Chicago Summer Course in Microphotography

The course in microphotography offered in the past by the Graduate Library School of the University of Chicago will be repeated during the forthcoming Summer Session, June 16-August 23. The course is designed, not for the training of microphotographic technicians, but for administrative librarians who wish to secure an understanding of the use, administration, problems and potentialities of the technique as they affect scholarly, and especially, college and university libraries. While laboratory instruction is not a part of the course, sufficient basic technical instruction is given to insure an understanding of the processes involved in the technique, and members of the class will be afforded an opportunity to study the equipment and processes of the extensively equipped laboratory of the University of Chicago Libraries. For further information, address Dean Louis R. Wilson, The Graduate Library School, the University of Chicago, or consult the JOURNAL OF DOCUMENTARY REPRODUCTION, March, 1940, p.57-8.—H. H. F.

Color Slides Cooperative

Further activities of Color Slides Cooperative, Princeton University,

described by Robert P. Griffing, Jr., and Donald N. Wilber, in an article entitled "Color Slides for Art Teaching" (Vol. III, p.26-33), are detailed in a series of bulletins which are distributed primarily to cooperating institutions. Bulletin Number Nine, which is the most recent to come to the attention of the JOURNAL, is a three-page folio pamphlet containing information on the "Masterpieces of Art" series, "The Frick Collection Sets" and other information for those interested in this activity.

DAVIDSON DUAL DUPLICATOR

The Davidson Manufacturing Corporation, makers of folding machines, feeders and other equipment for the graphic arts, has recently announced the Davidson Dual Duplicator, a new type machine which will produce both offset and relief duplication. It is intended primarily as an "office machine" for the production of letterheads, bulletins, booklets, cards, catalog pages and the reproduction of photographic facsimiles of various types, but may be used for much more ambitious projects if desired. With it, thin metal direct image or photographic offset plates, electrotypes, rubber plates and raised type may be reproduced thus making available in one machine two fundamentally different processes which previously required two separate machines. Duplication on conventional offset equipment generally requires three cylinders, a plate, a blanket and an impression cylinder, while relief duplication requires but two, a plate and an impression cylinder or platen. In the Davidson Dual Duplicator the plate and impression cylinders are combined as segments of one large cylinder frame operating in conjunction with a blanket cylinder, thereby permitting the use of the same two-cylinder frames for relief duplication.

The paper size accommodated is 10 x 14 inches and the standard production speed is 6000 sheets per hour. It is possible, however, to use a special motor and variable speed pulley to raise or lower the speed as desired. The two-cylinder construction is claimed to produce much better inking and moistening than is possible with the conventional three-cylinder machines, as the plate occupies slightly more than one third of the plate cylinder. During the balance of the revolution, the ink form rollers are free to make several revolutions, thereby becoming thoroughly re-inked before again transferring the ink to the plate.

Operation has been simplified by the reduction of controls to a minimum, and the incorporation of automatic adjustments wherever practicable. The machine is intended for operation by nonprofessional per-

sonnel, and it is stated that anyone of average mechanical intelligence can be trained to operate it in a short time. Distributing offices are being set up in the principal cities to provide demonstrations, installations, training of operators, service and supplies. A complete line of supplies, and attachments including plates, inks, solutions, etc., has been developed for use with the machine.

For complete information, address the Davidson Manufacturing Corporation, 1020 West Adams St., Chicago, Ill.

Elimination of Hypo from Photographic Images

The problem of permanence has always been of major importance to those engaged in photography. It is known that adequate washing of processed sensitive material to remove the hypo (sodium or ammonium thio-sulfate) after fixation is necessary, and numerous tests to determine the degree of hypo elimination have been proposed and used. Finer grain emulsions on paper or film deteriorate and fade much more rapidly than coarser grained stocks in the presence of even minute quantities of hypo. Microphotography requires exceedingly fine-grained sensitive materials. Advanced research in this field is therefore of considerable importance.

The Research Laboratories of the Eastman Kodak Company, have issued Communication No. 780 by J. I. Crabtree, G. T. Eaton and L. E. Muehler entitled *The Elimination of Hypo from Photographic Images.* The summary of the report is as follows:

It is very difficult, if not impossible, to remove the last traces of hypo from photographic papers by any known procedure of washing. The sulfur in the residual hypo ultimately, and especially under abnormal conditions of temperature and humidity, combines with the silver image to form yellowish-brown silver sulfide. This phenomenon is known as sulfiding or "fading" of the image. The various factors which affect the rate of fading of images and the washing out of hypo from films and papers are outlined.

Chemical methods of hypo elimination have been proposed but the majority of these have not been satisfactory because they tend to leave substances such as thionates in the photographic material, which are equally as difficult to wash out as hypo and which also tend to sulfide or fade the silver image. A new hypo eliminator is recommended consisting of two volatile chemicals, hydrogen peroxide and ammonia. This eliminator oxidizes the hypo to sodium sulfate, which is inert and soluble in water, while any excess eliminator evaporates on drying.

Two formulas and treatments are proposed: (1) Complete elimination of hypo for use by the professional, advanced amateur and photofinisher who demand the highest standard of photographic quality in their prints. (2) Almost complete elimination of hypo (less than 0.01 milligram per square inch). Since the conditions to which prints will be subjected are rarely known in advance, use of the "complete elimination treatment" is advised in all cases.

The report contains illustrations, graphs, charts, formulas, a bibliography of selected references and a chronological history of hypo eliminators. It bas been published in full in the *Journal of the Photographic Society of America* (Vol. VI, No. 4, October, 1940, p.6-13 *et seq.*), and in *American Photography* (Vol. XXXV, No. 4, April, 1941, p.272-86). Should enough snbscribers indicate a desire to have this exceedingly valnable paper available in the files of the JOURNAL, an attempt will be made to secure permission for such publication.

FLUORAPID FILM

Following extensive experimental work and close cooperation with interested medical authorities, a new Agfa film has been perfected which is ideally suited to the direct photography of fluorescent screens. Known as Fluorapid, the new emulsion will be available in various lengths of perforated 35mm. film stock. Main application of the new Agfa Fluorapid film will be its use in large-scale X-ray surveys, where small-size records of X-ray examinations are preferred for reasons of economy and filing space. Additional applications are anticipated in other fields employing fluorescent screen images.

The characteristics of the Fluorapid emulsion include unusually high sensitivity to fluorescent-screen radiation, fine grain, moderately hrilliant gradation and a color sensitivity closely matching the spectral emission of standard fluorescent screens. Regularly available sizes of Fluorapid film will include 5½-foot spool, 36-exposure Leica-type cartridge, 250-exposure Leica FF spool, and 33- and 100-foot bulk lengths. Further information can be obtained by addressing Medical Film Division, Agfa Ansco, Binghamton, New York.

GLOBE-WERNICKE MICROFILM STORAGE CABINET

In an article entitled "A Microfilm Storage Cabinet" (JOURNAL, Vol. III, p.96-8) Mr. Eugene B. Power described a cabinet design developed by University Microfilms for storing

short lengths and full 100-foot rolls of microfilm. At that time it was stated that a manufactnrer of filing equipment had made plans to market a metal unit constructed on the plan outlined in the article. The Globe-Wernicke Microfilm Storage Cabinet is the resnlt.

The cabinet measures 72 x 36 x 27 inches, and is made of heavy gauge metal finished dark olive green. A rubber seal has been placed around the edges of the doors so that when they are closed the unit is virtually airtight. The bottom drawer contains a humidifying tray filled with a saturated solution of sodium dichromate which maintains a relative humidity within the cabinet of 55 per cent at room temperature. Space both at the front and back of the drawers and shelves provides free circulation of air to assure complete humidification.

Facilities are provided for the storage of microfilm in short lengths on cores and full 100-foot rolls in cardboard containers. The latter are stored in drawers which accept 70 cartons with the short axis uppermost. Short lengths of film are stored on wooden cores bored to fit the spindles of standard reading machines. The cores are supported on shelves each containing 70 pegs made of heavy copper wire. Rolls up to 60 feet in length can be placed on the cores if desired. As they may be used on the reader directly without rewinding the film on reels, the cores have been found very practical in use. The drawers are supported on rollers aud operate easily. One drawer occupies the space of two shelves and both are interchangeable, thus allowing a cabinet to be modified to meet the changing needs of any library or institution.

For complete information write the Globe-Wernicke Corporation, Cincinnati, Ohio.

Graflex Identification Unit

The Graflex Identification Unit is a complete self-contained camera for the rapid inexpensive production of head-and-shoulder identification pictures on 35mm. film. Focus, lighting and exposure have been standardized; the speed of operation is limited only by the rapidity with which the subjects can be brought before the camera. Height, numerical identification and departmental designation may be included in the negative. The negatives may be printed by contact on all photographic pass-cards and used for tamper-proof badges or for personnel files.

The outfit includes a special stand, lights and a camera of the Photorecord type. The stand consists of a base mounted on three rubber-tired wheels and two upright pillars supporting a camera platform on a rack

and pinnon. An elevating wheel allows the camera platform to be raised and lowered easily. Indexing numbers and a frame showing the area covered are attached to the front of the camera platform. Two self-reflecting R40 lamps are also attached in a fixed position to the camera platform. The Photorecord type camera is equipped with a 75mm. f:4.5 lens in a heavy duty shutter and accepts 100 feet of 35mm. film. The individual negatives measure 25 x 35mm. and 800 may be placed on each full roll of film. The camera is arranged for easy operation; pushing the operating lever forward actuates the shutter; pulling it back advances the film for the next exposure.

The primary purpose of the Graflex Identification Unit is the making of identification photographs such as those widely used at the present time in connection with national defense work. It may also be used for a limited amount of microphotography, and has been suggested for the reproduction of gross objects, as, for example, museum specimens and mechanical parts.

Complete details may be secured from the Folmer Graflex Corporation, Rochester, New York.

Lamp Changes in Students Reader

In an article entitled "The Students Microfilm Reader" (JOURNAL, Vol. III, p.258-62) it was stated that the light source employed was an "S-11, candelabra, single contact bayonet base, 100-watt, 105-20 volt alternating or direct current projection lamp, list price 35 cents, rated life 25 hours." Before delivery of the production models of the instrument were begun, however, it was decided to substitute another light source known as a clear, spotlight, single contact bayonet base, 100-watt, 115-volt, G-16½ lamp, list price 90 cents, rated life 200 hours. The vastly increased life of the new lamp was believed to compensate for its higher cost; both are readily available.

Microfilm Readers in Latin America

Through the activities of the Committee on Scientific Aids to Learning and the American Library Association's Committee on Library Cooperation with Latin America, arrangements have been made to send three of the new Students Microfilm Readers to Latin America. One of these is intended for the use of Dr. Eugenio Pereira Salas in the National Archives of Chile. It will be made available to others from time to time. Another is to be used by Father Ruben Vargas Ugarte, S. J., Lima, Peru. It will be used in conjunction with a course in the

techniques of research and paleography. The third is destined for the use of Dr. J. Rodriguez Demorizi, Director of the National Archives of the Dominican Republic. It will be remembered that through a grant from the Rockefeller Foundation to the American Library Association's Committee on Photographic Reproduction of Library Materials, it was possible to provide Dr. Silvio Zavala of the Instituto Panamericano de Geografía é Historia, Mexico, D.F., with microfilm equipment for individual research; a part of this equipment will include one of these reading machines.

Microfilm Record of an Indian Exhibit

About ten days before the close of the San Francisco Exhibition, Dr. Frederic P. Keppel, of the Carnegie Corporation, suggested to Mr. René d'Harnoncourt, of the United States Department of the Interior, that a complete photographic record of the American Indian Art and Craft Exhibit at the Fair would be of permanent value. Accordingly, two photographers were immediately engaged to make approximately 3000 pictures of the exteriors and interiors of the exhibition buildings and of their contents.

In order to make these more generally available, arrangements were made with University Microfilms to prepare a film strip for distribution. From the entire file, 250 pictures, which told a complete story, were selected and provided with adequate titles. Exterior and interior views of the buildings, pictures of the separate objects and close-ups of details were included. Inasmuch as the exhibit itself had been arranged according to Indian types, such as Eastern Woodsmen, Plains Dwellers, Pueblo, etc., each section of the exhibit was treated as a separate entity on tbe film strip. Titles were set in type and printed with a mixture of Chinese white and aluminum ink on flat jet-black paper. They were mounted on the backs of the photographs. The whole was then photographed through glass with a Microfile camera on Panatomic X film to make the master negative. A complete copy of the film strip, mounted on a metal reel and enclosed in a cardboard container, may be purchased from University Microfilms for $5.

Thus, through a combination of photography and microphotography, an exhibit of considerable cultural significance has been permanently recorded and distributed. The positive film may be consulted in a reading machine by an individual scholar, or for larger groups, the film may be projected on a screen in an auditorium.

Microfilm Service of the New York Public Library

The microfilm service, like the photostat service which has been operated for the benefit of the public since 1912, is run at cost, but since microphotography is a new process, the fee charged is tentative. Experience has shown that the old schedule of charges was not entirely satisfactory and therefore, after some consideration of the principles involved, a new but still tentative schedule has been prepared.

The new schedule is based on the assumption that microfilm is better adapted to long consecutive runs than to short runs of a few pages each, yet, scattered short runs, whether parts of a continued article or entirely different references, can be handled with reasonable economy if grouped on the same order. The new rates mean (1) that the price per exposure decreases with the length of the run; (2) that there is economy in ordering a number of references at the same time; (3) that it will seldom be necessary, for the sake of economy, to split an order between photostat and microfilm depending on the length of the article.

The basic charge for each volume or other unit handled is fifty cents, for which sum ten exposures are allowed. Unused allowances are transferable from one volume to another on the same order and the fee for the remaining exposures over the total allowance of ten exposures for each volume is two cents each. The minimum *order* is seventy-five cents. Postage and mailing are extra: ten cents minimum in Manhattan and the Bronx, fifteen cents elsewhere. The library reserves the right to make special quotations on orders involving unusual difficulties.

Total number of exposures	
Allowance of ten exposures	
. . . . . each volume	@ $ .50
Remaining exposures . .	@ .02
Minimum camera charge per *order* seventy-five cents	
Postage and mailing	
Total	

Microphotographic Services at Columbia University

The Photograph Division of the Columbia University Libraries is equipped to make photostats, photographs and microfilm. Negatives, positives, lantern slides and enlargement prints can be supplied. We photograph material in our own collections or anything brought or sent to us.

The regular rate for negative microfilm is 2 cents an exposure on positive film and 3 cents on panchromatic. There is a service charge of 25 cents for each title or change in size, and a $1 minimum for each

order. Special prices are quoted on large orders or work involving unusual difficulties, such as interleaving, fragile binding, manuscripts or special groupings of separate sheets.

Most of our orders are for the microfilming of complete volumes and our prices are scaled to this kind of work. In these cases the service charge is a negligible part of the total cost, and the minimum charge is not involved. We have found that it does not pay to set a lower rate for the filming of articles from journals. Searching in the catalog, finding the books, bringing them to the camera and restoring them to their proper places contributes largely to the cost of microfilming; and the identification of references often takes more time for an article than for a complete work. The price per page will inevitably be high when the number of pages is small.

We supply adequate leaders and trailers on all orders, no matter how short the film may be. Titling information is given only for complete works. It consists of the author, title and date; and is large enough to be read easily without magnification.

Lantern slides 2 x 2 are made for 25 cents in black and white and 35 cents in Kodachrome. This includes mounting the film between glass; but if the scholar prefers to mount his own film to save part of the cost he may order film positives for 10 cents a frame including the negative. Filmstrips for projection are made at the same rate; but additional positive strips are supplied at the regular positive rate of 6 cents a foot.

There are frequent orders for projection prints of film from outside sources, where the original has been greatly reduced in filming or when the density of the negative is too great. Our charges are 25 cents for a print 11½ x 14, or 35 cents for 14 x 18. There is a service charge of 15 cents. Each print may include from one to four pages, depending on the number of pages appearing on a double frame of the film.

Microphotographic Session at A.L.A. Annual Meeting

Mr. Keyes D. Metcalf, Chairman of the American Library Association's Committee on the Photographic Reproduction of Library Materials, has announced that the committee and the Association of College and Reference Libraries will hold a joint session on Monday, June 23, at the annual meeting of the American Library Association in Boston. Three papers have been scheduled: the first by Dr. M. Llewellyn Raney, Director of the University of Chicago Libraries, entitled "The Role of Texts in Miniature"; the second by Mr. Herman H. Fussler, Head, Libraries' Department of Photographic Reproduction, "Some Prob-

lems in Microphotography"; and the third by Dr. Vernon D. Tate, Chief, Division of Photographic Archives and Research, The National Archives, "Microphotography Becomes Big Business." Ample time for discussion after the papers has been provided.

Arrangements are now being perfected for an exhibit of new equipment for microphotography. In addition, it is planned to have a meeting open to a limited number of invited librarians and others to discuss technical problems and the price structure for microphotographic work.

The foregoing at this time is purely tentative, and is subject to change.

New Microfilm Printers Installed

Two new microfilm printers manufactured by Oscar B. Depue of Chicago, Ill., have been installed recently in Washington. One of these was acquired by the Photoduplication Service of the Library of Congress, and the other by the Division of Photographic Archives and Research, The National Archives. Both machines are of the continuous type and will print 16 or 35mm. perforate or nonperforate positive or negative microfilm. They are equipped with the latest design light change boards for printing negatives of varying density. Counting the parent machine installed in the Libraries' Department of Photographic Reproduction of the University of Chicago, and another which was recently placed in the microphotographic laboratories of Brown University and one acquired by University in Microfilms, five of these machines are now in use. It is understood that another has been ordered.

New Temperature Standard for Agfa Materials

After lengthy study of all factors involved, a new temperature standard has been adopted by Agfa Ansco, specifying a value of 68° Fahrenheit (20° Centigrade) for the development of Agfa *films and papers*. Recommendations have formerly called for a developing temperature of 65° F. with films, 70° F. with papers.

Chief among the reasons for establishing the new temperature standard has been the desire to simplify existing separate recommendations on film and paper development which have in the past been a source of some confusion. Related to this condition has also been the realization that developing solutions can usually be maintained more easily at 68° than 65°.

It is expected that photographers using Agfa materials will experience little or no difficulty in changing

over to the new standard and maintaining uniform quality in their results. Current issues of instruction sheets and booklets for Agfa photographic materials will obviously not be in agreement with the new temperature standard, but this situation will be corrected as new editions are printed incorporating the 68° F. temperature standard.

Philadelphia Bibliographical Center and Union Library Catalogue

A new service combining the Union Library Catalogue of the Philadelphia Metropolitan Area and the Bibliographical Center has been established in Philadelphia. It is supported for an experimental period by the Carnegie Corporation while space is being provided by the University of Pennsylvania. The Executive Board of ten is under the direction of Dr. Conyers Read; Miss Mary Louise Alexander is Director of Planning, while Mr. Rudolph Hirsch is Director of the Catalogue. The Union Catalogue now consists of over three and a quarter million cards recording over five and one half million books in 151 libraries in the Philadelphia Metropolitan Area. It may be consulted by personal visit, by telephone or by mail. A survey entitled "Philadelphia Libraries and their Holdings" has just been published and is discussed elsewhere in this issue (see p.76). The Center will not duplicate or supplant any existing library in the Area; its aim is to make the holdings of Philadelphia libraries better known by serving as a clearinghouse on resources and services.

In an effort to investigate the microfilm resources of the Area an informal questionnaire has been sent out to accumulate specific information on the amount of material on film being made or purchased. A committee consisting of Dr. J. Periam Danton, Librarian of Temple University, Dr. John Heilemann of the American Philosophical Society and Mr. Frank Bobb of the Historical Society of Pennsylvania has been appointed to investigate technical and utilization phases of the subject.

A Project to Microfilm Irish Newspapers

Realizing that the British Museum possesses the only set of certain Irish newspapers and the most complete sets of others, and being aware of the possibility that all of these rare newspapers may be destroyed by fire in the near future, it is proposed that a few American libraries join together in a cooperative project to subscribe sufficient funds for making a microfilm negative of as many of the early Irish newspapers as may

be possible at this time. If ten or twelve libraries would be willing to subscribe an average of $250 each, or possibly five libraries at $500 each, it will be possible to obtain complete microfilm negatives of all of the newspapers listed in Table I, none of which are at present in American libraries, and some of which do not exist anywhere else in the world. The Library of Congress has a nearly complete collection of *Saunders' News-Letter* (Dublin) 1830–1875.

Will interested librarians and individuals please communicate with the undersigned as soon as possible, indicating the amount that your library would be willing to subscribe to this project. The American Irish Historical Society will act as agent for the subscribing libraries and will deposit the negative films in the Library of Congress, or other appropriate place, from which positive copies may be obtained inexpensively in the future. Members of the American Irish Historical Society have agreed to contribute at least 10 percent of the amount supplied by other libraries. If you feel that this project is deserving of early accomplishment, please do what you can to make it possible.—Alexander I. Rorke, Librarian, The American Irish Historical Society, 991 Fifth Avenue, New York, N. Y.

TABLE I

Title	Period*	Estimated Cost
Dublin Gazette	1706–1730 (imperfect)	$ 90
Dublin Evening Post	1732–1734, 1737–1741	60
Dublin Journal	1745–1768	200
Freeman's Journal	1769–1773	60
Saunders' News-Letter	1773–1829	1450
Waterford Chronicle	1771, 1811–1822	90
Waterford Mirror	1808–1809	10
Wexford Independent	1830–1852	190
People (Wexford)	1853–1890	330
Gorey Correspondent	1861–1892	140
Enniscorthy Watchman	1869–1886	90
		$2710

*A few years missing and some years imperfect.

Summer Course in Microphotography at Columbia

Dr. Mary A. Bennett, Supervisor of the Photograph Division of the Columbia University Libraries, and

Miss Dorothy Hale Litchfield, Supervisor of the Microfilm Collection, will repeat again in the Summer Session of 1941 in the School of Library Service the course which has been given in the past two summers on "Microphotography for the Library."

When the course was originally planned it included lectures on optics and chemistry, both of which are fundamental to a thorough knowledge of the subject. But the experience of two terms shows that there is not enough time in a six weeks' course to teach fundamental principles as well as the practical applications which professional librarians need to learn, so it has been decided to omit a good deal of the purely scientific material in favor of more work on library problems.

About half the time will be spent on the technique of photographing and processing. The rest of the term will be devoted to the handling of microfilm: cataloging, storage, reading machines, and ordering films from other libraries.

There will be daily lectures at 2:30 and two laboratory sections, each meeting two days a week from 3:30 to 6:30. The $5 laboratory fee entitles students to use the Photograph Division equipment, but all students whether or not they are taking the laboratory work are assigned to practice periods with the reading machines and other Microfilm Collection apparatus.

Applications for permission to take the course should be sent to the Dean, School of Library Service, Columbia University.

Theodore Roosevelt Letters on Microfilm

The Roosevelt Memorial Association, 28 East 20th Street, New York, has acquired microfilm copies of the Theodore Roosevelt Letterbooks in the Manuscript Division of the Library of Congress, covering the dates April, 1897, to March 4, 1909; Nov. 18, 1912, to July 11, 1916 (104 volumes).

By agreement with Dr. St. George L. Sioussat, Chief of that division, these microfilm letters may now be consulted here under the same rulings as apply in the Library of Congress, briefly: (1) Scholars must present to the librarian a letter granting access to the letters, signed by Dr. Sioussat or his authorized agent; (2) Notes made from letters must be submitted through the librarian to Dr. Sioussat for his consideration; (3) Publication must be taken up with the Guaranty Trust Company, 140 Broadway, New York, acting for the Roosevelt estate.

The Roosevelt Memorial Association feels that it is making a real contribution in offering this service to the scholars of American history. Subject to the same rulings, it is also

making available its own letter collection. It wishes also to stress that the library collection contains what is next in importance to scholars, viz., Theodore Roosevelt's own scrapbooks of clippings, dating from 1876, his Harvard student days through to the end of his presidency, March 4, 1909 (150 volumes). The value of these cannot be overemphasized, and when combined with the microfilm letters, they form together a unique storehouse of primary source material.

The library is in essence an American history library, covering from 1880 to 1920, with the emphasis naturally on Theodore Roosevelt. Collateral material has been comprehensively considered: memoirs of his friends and contemporaries; Panama Canal diplomacy; Spanish-American War; ephemeral political campaign literature; cartoons; photographs; clippings; and long runs of the *New York Times, Tribune, World* and the *London Times.*

In its collections and its services, the library is entirely impartial. Reading room facilities include the use of a Model "C" Recordak Film Reader.—Nora E. Cordingley.

Three Dimensional Projector

A new three dimensional projector for slide films and glass slides has been made available by the Society for Visual Education under the designation S.V.E. Model SA Projector. Most three dimensional projectors employ dual lighting systems, containing two bulbs and two lamp houses. The Model SA Projector, however, is built around a new type of double filament lamp containing two 300-watt filaments placed one above the other. Stereo pairs, therefore, are prepared in the vertical rather than the conventional horizontal plane. Strip films are used by printing the halves of a pair four frames apart and advancing them two frames at a time by a manual control. Standard black and white or color 35mm. film may be used, and with the glass slide attachment, either single or double frames may be projected. Dual condensors and projection lenses are provided. It is necessary to use polaroid viewing spectacles and an aluminized screen with this machine. Specially prepared photographs made with a stereo camera or with a conventional camera recording a scene from two slightly different angles are also necessary. The Society offers special glass slides 2 x 4½ inches in size, mats and binding tape, or will make up three dimensional filmstrips at 35 cents per frame (as two frames are required per picture the cost is 70 cents with an additional charge of 50 cents per pair for aligning). The projector for film strips only, fitted with regular S.V.E. lenses, lists for

$125; equipped for both film and glass slides, and with anastigmat lenses, it is priced at $150. Polaroid spectacles for use with this machine are sold in paper frames at eight cents, with considerable reductions for quantity orders. Polaroid film laminated between two pieces of glass and mounted in a pair of plastic spectacle frames are supplied at $2.50 each. Further details may be secured from the Society for Visual Education, 100 East Ohio Street, Chicago, Ill.

The Transfer of Files on Microfilm

In June, 1940, the Economic, Financial and Transit Department of the League of Nations prepared to transfer its offices from Geneva to Princeton University. It was found impossible, however, to move the valuable file of statistical data contained on some 16,000 cards. Accordingly, these were microfilmed on a Graflex Photorecord camera which had been installed in the International Labor Office in 1939. Because of unsettled conditions, no operators were available, and consequently all of the camera work was undertaken by the staff, using equipment with which they were not familiar. For these reasons, although microfile film was used throughout, the results were only of moderate quality. When completed, the rolls of film were placed in the Diplomatic Pouch and sent to the United States.

On arrival, it was decided to recreate the file in the form of positive paper prints. Arrangements were made with University Microfilms to undertake this work, using double-weight card stock and a special enlarger which produces prints of great sharpness. Exposures were made semi-automatically on the sensitive material which was processed, washed and dried in rolls. Afterward these were trimmed to make cards 5 x 8 inches in size. Because of the economies which could be effected by this method of operation, the unit cost was 5.8 cents per card, and the statistical file was transferred intact and reproduced at a very moderate cost.—E. B. Power.

FOREIGN SECTION

The Film Process for Copying Documents—Its Usefulness for Copying Old Historical Manuscripts.*

M. C. Trivedi

The following notes are put together with a view to acquaint the public—especially the owners and scholars of ancient manuscripts—with the Film Photo-Process for copying manuscripts and documents. It is hoped the public will see that it supplies a long felt need of reproducing cheaply and in facsimile manuscripts old and new.

2. The process is, for the last twelve years, efficiently doing the work of reproducing Registered Documents in the Registration Department of the Province of Bombay, for which it was originally devised and started. After the staff was sufficiently trained to cope with the registration work, activities of the process were extended to other fields; the foremost among these is the reproduction of ancient manuscripts.

3. India has been, for ages past, a home of learning. It is well known that relics of ancient lore lie scattered here and there all over India, in the possession of private individuals or institutions. At the time these relics came into existence, there were no letter or hand presses and consequently all of them were written by hand on paper, that has fortunately proved lasting. Most of these manuscripts are written in rather obsolete languages like Prakrita or Magadhi.

4. To a student of antiquity and historical research, these old manuscripts reveal a mass of information, the value of which he only knows. Unfortunately for him they lie scattered and it is a great handicap to him to collect them together, as the owners or institutions are naturally unwilling to part with the only remnant in their possession, for any length of time. Nor is it convenient for the research worker to study them all together; the very nature of his study is slow, being mostly relative and critical.

*Ed. note: This paper was presented at the public meeting of the Indian Historical Records Commission held at Poona, India, in December 1938, and was printed by the Government of India Press, Simla, India, in 1939. Dr. Horace I. Poleman, Chief, Indic Division, the Library of Congress, brought it to the attention of the Editor and suggested that it be reprinted verbatim as an indication of work in microphotography in the East.

5. What is then the procedure that these research workers have to adopt for their studies? It is usually this:— They are constantly on the look out for the particular manuscripts and as soon as they get them they copy them down by hand or engage a scribe to do so. In both cases, the task is tedious, long and arduous; at the same time, they cannot help committing some mistakes in transcribing, as it is almost impossible to avoid them wholly, however careful one might try to be. The manuscript is returned after transcribing, another is obtained and the same task is repeated with all.

6. Looking to the immense trouble above mentioned in the way of transcribing by hand, the ease and rapidity which the camera brings to the aid of this difficult task is wonderful. It is not uncommon to hear of ardent students of antiquity in Europe going about with a small well-equipped camera for occasional use to reproduce rare old relics. But this is so far done on a small scale, *i.e.*, where a dozen or two sheets are to be copied; the cost by the ordinary processes of photography is so prohibitive that none but an ardent lover of antique lore supported by well-to-do patrons can afford to go in for it.

7. In the new Film Process, rapidity of reproduction as well as cheapness in cost are wonderfully maintained. A print 7¼″ x 4½″ is given for a trivial cost of a few annas; whereas, if the same reproduction were made by any of the ordinary processes of photography, the cost will come to about a couple of rupees. It is possible to give prints of any size up to 15″ x 12″ and the one commonly liked for manuscripts is 12″ x 7½″ which costs annas eight only for the first copy and annas six for second and subsequent copies, and gives nearly same size copy for most of them.

8. As for the rapidity of reproduction it will suffice to cite one actual instance. A manuscript volume of 1000 sheets was once received for reproduction; in addition to the usual Government work, it was photographed and printed in two days only. I request the readers to imagine this as a hand copying job. What a disheartening thing it is! None can say that it could have been copied by hand, by the smartest scribe, in two days, not to talk of the elimination of errors which are inevitable in hand copying.

9. There is one more important point that may be mentioned in connection with this apart from the advantages of rapid, faithful and cheap copying. It is this: that, if more copies are required in future, it is not necessary to produce the original manuscript again, as the negatives which are very small and take but little space can be conveniently preserved, from which copies can be supplied at any time.

10. Rare manuscripts or records which are not often required for reference may be photographed now only in the film form, *i.e.*, prints on paper may not be taken from their film negatives. In this case the whole cost of taking a print is saved. The cost of making the negative only will be about two annas per side photographed.

11. To read the contents of the small negative, very efficient and cheap reading machines are now available in the market which enlarge the negative to the size of the original manuscript photographed.

12. This method is greatly to be commended for the use of libraries, record offices, historical societies and research institutions for their numerous copying needs. A very rare manuscript required by a scholar on loan need not necessarily leave the precincts of the institution; its film copy taken at a very small cost can as well do. Rare and old manuscripts in the process of decay can be copied out in *facsimile* at a very small cost. Thus given a new lease of life they can start their earthly career again. The voluminous records of a library can be compressed into a small space, which in a record office is an ever worrying problem.

13. The use of safety base film and shortly now of aluminium base ensures Film Records to be thoroughly permanent—more, it is claimed, than papers of maximum purity.

14. By this process, we have so far reproduced hundreds of manuscript pages for professors, scholars, priests

SCHEDULE OF RATES FOR DIFFERENT SIZES OF PRINTS

No.	Size.	First copy.	Second copy.
		Rs. a. p.	Rs. a. p.
1	7¼″ x 4½″	0 5 0	0 3 0
2	7¼″ x 9″	0 10 0	0 6 0
3	10″ x6″ or 12″ x 5″	0 6 0	0 4 6
4	12″ x 10″	0 12 0	0 9 0
5	12″ x 7½″ or 15″ x 6″	0 8 0	0 6 0
6	15″ x 12″	1 0 0	0 12 0
7	13½″ x 8½″	0 10 0	0 8 0
8	16″ x 10″ or 20″ x 8″	1 0 0	0 12 0
9	20″ x 16″	2 0 0	1 8 0

and research institutions. They all acclaim with one voice the great facility afforded to them by the Film Process. What they like above all is that manuscripts are returned within a couple of hours, which means a lot to scholars who can obtain for a short time only the loan of these manuscripts from their owners. The scholar is, therefore, in a position to collect much more material in a given time than could otherwise have been possible for him; also he gets them transcribed in *facsimile* for his later studies at a very little cost.

15. Any one interested in having his manuscripts copied would do well to try the process and be convinced of its merits. The manuscripts, together with instructions for their reproduction, may be sent to the Government Photo Registry Office, Poona, bearing on the outer cover the words "MANUSCRIPTS FOR REPRODUCTION." A schedule of charges is found on page 70.

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BOOK REVIEWS and NOTICES

GUIDE TO LIBRARY FACILITIES FOR NATIONAL DEFENSE. Preliminary edition. Edited by Carl L. Cannon for the Joint committee on library research facilities for national emergency. Chicago, American library association, 1940. 235p. $1.25.

This publication attempts to locate and describe, in preliminary fashion, the "principal collections" of library materials relating to "war industries and defense preparations," to the end that American libraries may more effectively facilitate defense research programs. Despite limitations common to guides compiled by the questionnaire method, its editor has brought together a mass of information useful for this purpose. The data obtained in the survey from the so-called special libraries, whose service to modern scholarship is as yet too little realized, are particularly valuable.

Entries are arranged under forty-two broad subjects with "sub-headings for divisions of the field" regionally classified. This rather complicated textual arrangement is supplemented, indeed, it is made usable only by the inclusion of a clearly organized table of contents and an unusually detailed index. The up-to-date directory of approximately five hundred libraries covered by the survey should prove useful as a reference tool for librarians and research workers alike. The frequent indication of the existence of various types of finding mediums relating to particular subjects or specialized collections should likewise be of general interest.

Especially interesting to readers of the JOURNAL OF DOCUMENTARY REPRODUCTION is the indication of some fifty-eight libraries, mostly of the special libraries class, of the existence of photographic and photostatic facilities available to their clients. Undoubtedly many more of the institutions covered by the survey possess such facilities, and it is to be hoped that a more complete record of such accommodations will be included in the definitive edition of the *Guide*. The description of library holdings relating to photography and auxiliary fields, collections of photographs, photostats, microfilms, slides, etc., should likewise be of interest.

Criticism of the technical features of the *Guide* may best be left to the library journals. However, it might

be suggested that the definitive edition should contain a more logical selection of major subject headings, and that their subdivisions might be revised in order to avoid the confusion between major and minor headings which arises when the reader attempts to follow the system of "See references" adopted by the editor. Some of the "See references" should be revised to lead the reader directly to the desired entry (*e.g.*, why refer the reader from Agricultural Chemistry, p.17, to Chemistry, Agriculture, p.36, only to refer him back to Agriculture, p.18?). The format of the *Guide* could be distinctly improved by the elimination of the "dangling" subject, regional, and institutional headings so frequently found at the bottom of pages throughout the text.—Karl L. Trever.

KODAK REFERENCE HANDBOOK. Rochester, N. Y.: Eastman Kodak Company, 1941. 521p. 5¾ x 8½ inches. illus. loose-leaf notebook, $2.

The popularity of the loose-leaf photographic reference handbook is attested by the issuance by the Eastman Kodak Company of this extensive collection of detailed information on materials, processes and techniques. In it may be found the latest information about Eastman products and equipment. In certain respects it represents a collection and elaboration of the popular informational reference pamphlets on specific subjects issued by the Kodak Company. (For examples see JOURNAL, Vol. III, p.135-36).

The present compilation contains ten chapters or sections, as follows: 1. Kodak Lenses. 2. Kodak Films. 3. Filters. 4. Kodachrome. 5. Papers. 6. Darkroom Design. 7. Development. 8. Chemicals and Formulas. 9. Copying and Microfilming. 10. Slides. For the most part the titles are indicative of the contents of each section. The material is clearly presented with numerous charts, diagrams, graphs and tabulations; and is plentifully illustrated by photographs, some of which are in color. Those interested in microphotography will find the 58 pages devoted to Copying and Microphotography absorbingly interesting and exceedingly valuable.

The makeup of the book is of interest, for it involves several novel features including extensive use of kodapak lamination on cover and section titles, pleasing conventionalization of ornamentation for each section, effective photomontage and a combination loose-leaf binder of the spiral type which opens readily for the insertion of new material. Paging is not consecutive, for each section has been arbitrarily allotted 100 pages; thus, the section on Lenses (Section 1) begins with page

101, while that on Copying and Microphotography (Section 9) begins with p.901. An index at the beginning of the volume is supplemented by a handy strip index, section tabs, and a sectional table of contents.

This is the best concise collection of factual photographic data organized around Eastman Kodak products within the knowledge of the reviewer. It will be found useful if not indispensible. While no announcement has been made of continuations, the format is adapted for the insertion of additional material, and it is to be hoped that such data will be provided.

PHILADELPHIA LIBRARIES AND THEIR HOLDINGS; Data compiled as a Report on Philadelphia Libraries to the Carnegie Corporation of New York by the Bibliographical Planning Committee of Philadelphia. Philadelphia, Pa.: University of Pennsylvania Press, 1941. 46p. 8½ x 11 inches. paper, 50c.

This survey, a part of a much larger report, was separately printed to serve as a ready reference tool for Philadelphia librarians. The treatment throughout is largely tabular and has been divided into five sections as follows: I. Chronology of Philadelphia Libraries to 1900. II. Classified list of Philadelphia Libraries. In this section some indication of library holdings is given. III. Library Statistics, containing further information on holdings, periodical subscriptions, staff and expenditures. IV. Guide to Research Materials, which is the most extensive, and lists materials and collections under 29 headings; in some cases the sources are divided into primary, secondary and smaller. Of particular interest to the readers of the JOURNAL is the 29th heading which locates microfilm and photostat equipment in this area. V. Philadelphia Library Holdings, as entered in Union Lists and Bibliographies. There is also an alphabetical list of libraries with their addresses. Although the publication was intended to serve a limited field, there is much information contained in it which is of more than local importance. Every large research library will be interested to learn more about the great resources of the Philadelphia Metropolitan Area and to examine through the medium of this brief report the operation of a significant development in library cooperation.

PATENT SECTION*

U.S. 1,411,008, March 28, 1922, Bradley A. Fiske, Washington, D.C.

Compact optical magnification reading machine capable of being carried in the pocket of the user. 3p. 1pl.

U.S. 1,457,429, June 5, 1923, Bradley A. Fiske, Washington, D.C.

Reading machines wherein reading matter reduced to characters of microscopic size is carried in parallel columns on a strip or sheet, and is adapted to be brought successively into the field of view of a single lens. 2p. 1pl.

U.S. 1,476,290, Dec. 4, 1923, Bradley A. Fiske, New York, N.Y.

Optical magnification reading machine and cylindrical sheet carrier. 4p. 3pl.

U.S. 1,568,148, Jan. 5, 1926, Bradley A. Fiske, New York, N.Y.

Improvements in reading machines of the optical magnification type. 2p. 1pl.

U.S. 1,669,870, May 15, 1928, Bradley A. Fiske, New York, N.Y.

Improvements in reading machines of the optical magnification type. 2p. 1pl.

U.S. 1,707,351, April 2, 1929, Bradley A. Fiske, New York, N.Y.

Improvements in reading machines of the optical magnification type. 2p. 1pl.

U.S. 1,742,640, Jan. 7, 1930, Bradley A. Fiske, New York, N.Y.

Improved compact reading machine of the optical magnification type. 2p. 2pl.

U.S. 1,756,111, April 29, 1930, Adrian W. Wisner, Tacoma, Washington.

Photographic copying apparatus for reproducing written or printed matter on a sensitized film ribbon and with slight adjustment for printing positive copies from the film negatives. 4p. 2pl.

U.S. 1,807,761, June 2, 1931, Eduard Spröngerts, Wiesbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Wiesbaden-Biebrich, Germany.

Process of improving the resistance of diazo-types to water. 2p. no pl.

U.S. 1,816,989, Aug. 4, 1931, Maximilian Paul Schmidt, Wilhelm Neugebauer and Robert Franke, Weisbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Weisbaden-Biebrich, Germany.

Light sensitive materials (diazo). 3p. no pl.

U.S. 1,822,651, Sept. 8, 1931, Bradley A. Fiske, New York, N.Y.

*The Patent Section is made possible through a grant received from the Committee on Scientific Aids to Learning. The listings include the patent number, date of issue, patentee and assignee (if available), a brief description of the published purpose or title of the patent and an indication of its size; for example, 4p. means 4 pages; 4pl. means 4 plates of accompanying drawings.

Improvements in reading machines of the optical magnification type intended especially for use in the reading of printed matter. 2p. 1pl.

U.S. 1,853,462, April 12, 1932, Maximilian Paul Schmidt and Wilhelm Krieger, Wiesbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Wiesbaden-Biebrich, Germany.

Diazo-types and process of making the same. 2p. no pl.

U.S. 1,857,920, May 10, 1932, Robert Lantz, Saint-Denis, France, assigned to Société des Anciens Etablissements Salvatori, Leperche; Frangialli et Cie, Sucs., Paris, France.

Light sensitive papers and other bases and light sensitive layers (diazo) therefor. 3p. no pl.

U.S. 1,861,330, May 31, 1932, Lodewijk Pieter Frans van der Grinten and Karel Jan Joseph van der Grinten, Venlo, Netherlands, assigned to N. V. Chemische Fabriek L. van der Grinten, Venlo, Netherlands.

Manufacture of sensitive diazo-type layers. 4p. no pl.

U.S. 1,870,930, Aug. 9, 1932, Eduard Wilhelm Spröngerts, deceased, late of Weisbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Weisbaden-Biebrich, Germany.

Light sensitive layer (diazo). 3p. no pl.

U.S. 1,881,072, Oct. 4, 1932, Bradley A. Fiske, New York, N.Y.

Improvements in reading machine of the optical magnification type. 5p. 4pl.

U.S. 1,890,149, Dec. 6, 1932, Bradley A. Fiske, New York, N.Y.

Improvements in reading machines of the optical magnification type. 3p. 1pl.

U.S. 1,906,240, May 2, 1933, Maximilian Paul Schmidt, Wilhelm Krieger and Walter Spietschka, Weisbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Weisbaden-Biebrich, Germany.

Process (diazo) for continually producing pictures on films. 3p. no pl.

U.S. 1,929,199, Oct. 3, 1933, Bradley A. Fiske, New York, N.Y.

Improved reading machine of the optical magnification type. 3p. 2pl.

U.S. 1,934,011, Nov. 7, 1933, Maximilian Paul Schmidt and Herman Neuroth, Weisbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Weisbaden-Biebrich, Germany.

Light sensitive layers (diazo). 3p. no pl.

U.S. 1,936,957, Nov. 28, 1933, Maximilian Paul Schmidt, Wilhelm Krieger and Eduard Spröngerts, Weisbaden-Biebrich, Germany, assigned to Kalle and Co. Ag., Weisbaden-Biebrich, Germany.

Light sensitive layers (diazo). 2p. no pl.

U.S. 1,943,377, Jan. 16, 1934, George Holland Ellis, Spondon, near Derby, England, assigned to Celanese Corporation of America.

Treatment of cellulose esters (diazo). 3p. no pl.

U.S. 1,977,475, Oct. 16, 1934, Martin Feybusch, New York, N.Y.

Means for reading books, manuscripts and musical compositions reproduced on film with complete manual control of image. 8p. 6pl.

U.S. 2,121,061, June 21, 1938, Leonard G. Townsend, Washington, D.C.

Method and apparatus for the indexing and photo transcription of records. 13p. 5pl.

EDITOR'S CORNER

The Writers

Professor James A. Reyniers is Associate Professor of Biology and Director of the Research Laboratories, University of Notre Dame. Mr. Robert F. Ervin and Mr. Philip Charles Trexler are Instructors in Biology and Research Associates in the Laboratories of Bacteriology, University of Notre Dame. Mr. Weeks Hall, writer and photographer, is a descendant of the builder and the present owner of the historical Louisiana plantation, "The Shadows." Dr. Edwin A. Davis is Head of tbe Department of Archives, Louisiana State University. Mr. C. Z. Case is an official of the Eastman Kodak Company. Dr. Horace I. Poleman is Chief of the Division of Indic Studies, the Library of Congress. Mr. Preston W. Edsall is Research Expert in the Office of the Director of Research and Publications, The National Archives. Dr. Irvin Stewart is Chairman of the Committee on Scientific Aids to Learning. Mr. Eugene A. Tilleux is Bibliographic Consultant, Works Projects Administration, Washington, D.C. Mr. M. C. Trivedi is Supervisor Government Registry Office and Photographic Expert to Government, Poona, India. Mr. Ralph H. Carruthers, an Associate Editor of the journal, is Assistant in Charge of Photographic Service, the New York Public Library.

Microphotography in 1858

In a recent letter to the Editor, Mr. Joe Hare, Librarian of the University of Denver, has called attention to a curious definition and evaluation of microphotography which was published in 1858 in the *Dictionary of Photography* by Thomas Sutton. As supplied by Mr. Hare, pertinent extracts from a photostatic reproduction of a portion of the original volume in the John Crerar Library are herewith reproduced.

Microphotography. Under this head may be included two different processes. One is of little or no practical utility, and consists in copying objects on an exceedingly small scale, the photograph being intended to be viewed through a magnifier, or microscope. The other, which is a branch of photography of the highest interest and importance, consists in producing enlarged photographs of minute objects—that is, in fixing the images obtained in the microscope.

With respect to the former of these two processes, a few words will suf-

fice. In order to obtain an extremely minute image of an object, it must either be placed at a much greater distance than usual from the lens, or a lens of very short focus must be used. Any of the ordinary forms of photographic lens may he made of one inch focal length, and then hy placing the object or group to be copied at a suitable distance, a photograph may be obtained in a drop of collodion. The only difficulty in the process is that of focussing. This may be done on the sensitive film, itself, a yellow glass being interposed between it and the lens while focussing, and a powerful magnifier employed to examine the focus. Negatives may, of course, be copied either by transmitted natural or artificial light. Enough has now been said about a process which must strike any reasonable person as somewhat trifling and childish, when he considers how many valuable applications of photography remain yet to be worked out.

This definition and evaluation of microphotography is significant for several reasons. Even today some confusion exists between the terms *microphotography* and *photomicrography*. As understood in the United States at the present time, *microphotography* refers to a greatly reduced facsimile or photograph of a large object; it has gradually assumed a specific meaning applying to reproductions of textual and related materials. Photomicrography refers to enlarged photographs of minute objects usually made through a microscope. Recently a third term, *photomacrography,* has appeared, referring to moderately enlarged photographs of small objects, as, for example, insects, made with combinations of photographic equipment not usually including a microscope. In Europe and particularly Germany, the meanings of the terms are exactly reversed. It is known that microphotography appeared shortly after the publication of Daguerre's disclosure of his process some 19 years before the publication of Sutton's definition; 12 years later textual microphotography was to receive its first large scale application during the Siege of Paris.